

PRODUCTION PLANNING AND PROCESSING

ECS Release 4 Training

Overview of Lesson



- Introduction
- Production Planning and Processing (Context)
- Production Requests
- Production Rules
- Launching the Production Request Editor
- Creating/Updating a Production Request
- Reviewing/Deleting Data Processing Requests
- Submitting or Withdrawing a Subscription



- Launching Planning Workbench-Related GUIs
- Defining a Production Strategy
- Creating a New Production Plan
- Reviewing a Plan Timeline
- Troubleshooting Production Planning Problems
- Launching Production Processing Applications
- Configuring AutoSys Screens/Displays
- Reviewing Hardware Status, DPR
 Dependency, DPR Production Timeline,
 Alarms, and Job Activities



- Modifying Job Priority
- Modifying Job Status
- Reviewing Activity and Job Dependency Logs
- Defining and Running Monitors/Browsers
- Changing the Database Maintenance Time
- Troubleshooting Processing Problems
- Launching the Quality Assurance (QA)
 Monitor
- Updating QA Metadata
- Regenerating Granules in Response to a Loss of Files from the Archive



Practical Exercise

- Launching the Production Request Editor
- Creating a New Production Request
- Editing/Modifying a Production Request
- Reviewing Data Processing Requests
- Deleting a Data Processing Request
- Submitting or Withdrawing a Subscription
- Launching Production Workbench-Related GUIs
- Defining a Production Strategy
- Creating a New Production Plan
- Reviewing a Plan Timeline



- Practical Exercise (Cont.)
 - Troubleshooting Production Planning Problems
 - Launching Production Processing Applications
 - Configuring AutoSys Runtime Options
 - Reviewing Hardware Status and Changing Hardware Status Views
 - Reviewing DPR Dependencies
 - Reviewing the DPR Production Timeline
 - Reviewing Alarms and Configuring Alarm Selection
 - Specifying Job Selection Criteria and Reviewing Job Activities
 - Modifying Job Priority



- Practical Exercise (Cont.)
 - Modifying Job Status
 - Reviewing Activity Logs and Job Dependency Logs
 - Defining and Running Monitors/Browsers
 - Reviewing the Database Maintenance Time
 - Troubleshooting Processing Problems
 - Updating Quality Assurance (QA) Metadata
 - Regenerating Granules in Response to a Loss of Files from the Archive

Objectives



OVERALL:

 Develop proficiency in the procedures that apply to production planning and production processing operations

SPECIFIC:

- Describe the general functions and processes included in the Planning and Data Processing Subsystems (in the context of ECS operations)
- Perform the steps involved in...
 - » Launching the production request editor
 - » creating a new production request
 - » editing/modifying a production request
 - » reviewing data processing requests
 - » deleting a data processing request

Objectives (Cont.)



SPECIFIC (Cont.):

- Perform the steps involved in...
 - » submitting or withdrawing a subscription
 - » launching production workbench-related GUIs
 - » defining a production strategy
 - » creating a new production plan
 - » reviewing a production plan timeline
 - » troubleshooting production planning problems
 - » launching production processing applications
 - » configuring AutoSys runtime options
 - » reviewing hardware status (including changing hardware status views) using AutoSys
 - » reviewing data processing request (DPR) dependencies

Objectives (Cont.)



SPECIFIC (Cont.):

- Perform the steps involved in...
 - » reviewing the DPR production timeline
 - » reviewing and configuring AutoSys alarms
 - » specifying job selection criteria and reviewing job activities using AutoSys
 - » modifying job priority using AutoSys
 - » modifying job status using AutoSys
 - » reviewing activity logs and job dependency logs
 - » defining and running monitors/browsers
 - » reviewing the database maintenance time
 - » launching the Quality Assurance (QA) Monitor GUI

Objectives (Cont.)



- SPECIFIC (Cont.):
 - Perform the steps involved in...
 - » updating QA metadata
 - » regenerating granules in response to a loss of files from the archive
- STANDARD:
 - Mission Operation Procedures for the ECS Project (611-CD-004-003)

Production Planning and Processing



ECS Context

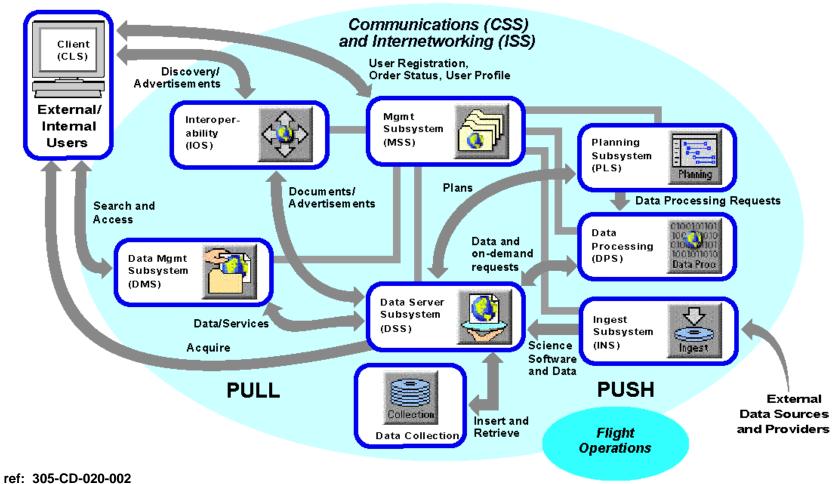
- ECS production planning and processing processes are accomplished at the Distributed Active Archive Centers (DAACs)
- People involved in production planning and processing activities are...
 - » Production Planners
 - » Production Monitors



- ECS Context (Cont.)
 - Production Planner
 - » performs planning functions; especially, notifying the Planning Subsystem (PLS) of the science processing jobs that are to be processed and when they are to be processed
 - Production Monitor
 - » keeps track of operations in the Data Processing Subsystem, especially the execution of science data processing jobs (creation of data products)

ECS Context Diagram





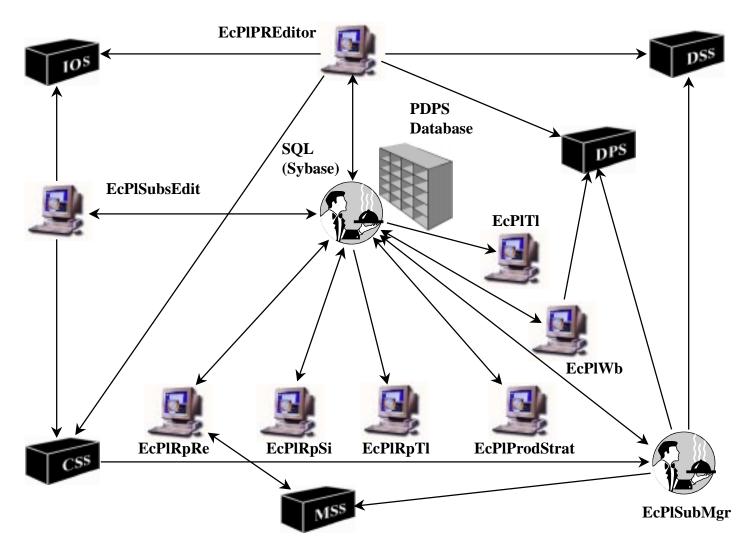


Planning Subsystem

- provides a mechanism for accomplishing the following general functions:
 - » Defining DAAC production resources
 - » Scheduling production resources for nonproduction-related activities
 - » Defining data processing jobs to be performed at the DAAC
 - » Generating efficient plans for scheduling defined data processing jobs
 - » Coordinating production with the Data Server Subsystem and Data Processing Subsystem to achieve a highly automated production system

Planning Architecture



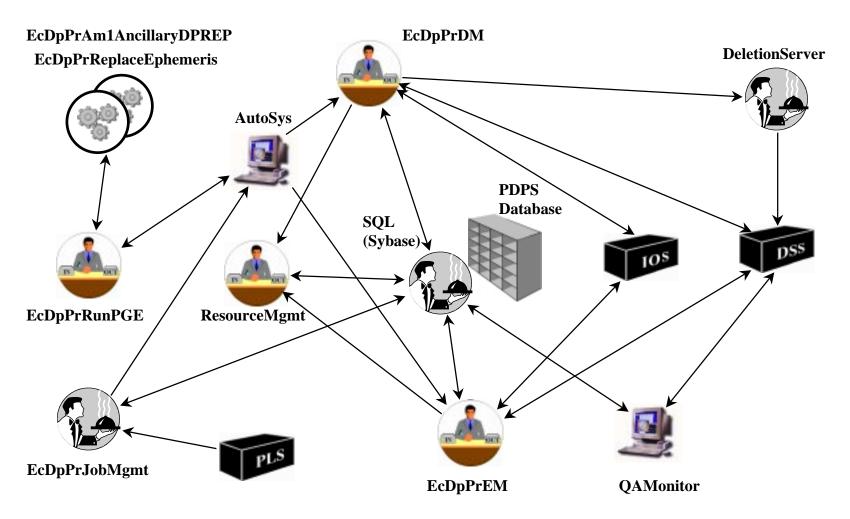




- Data Processing Subsystem
 - provides a mechanism for accomplishing the following general functions:
 - » Managing the allocation of data processing jobs to the site's data processing resources
 - » Managing, queuing, and executing data processing jobs to produce data products
 - » Supporting preliminary processing of ancillary data sets
 - » Providing a Quality Assurance (QA) environment for checking the quality of data products

Data Processing Architecture (PRONG)







- PLANG is the Planning Subsystem computer software configuration item (CSCI)
 - Resource Planning Workbench
 - » Resource Definition GUI (EcPIRpRe)
 - » Resource Planning GUI (EcPIRpSi)
 - » Resource Planning Timeline GUI (EcPIRpTI)
 - Production Request Editor (EcPIPREditor)
 - Production Planning Workbench
 - » Planning Workbench GUI (EcPIWb)
 - » Production Strategies GUI (EcPIProdStrat)
 - » Production Planning Timeline (EcPITI)



- PLANG (Cont.)
 - Subscription Manager (EcPlSubMgr)
 - Subscription Editor (EcPISubsEdit)
 - Sybase Structured Query Language (SQL) Server
 - Message Handler (EcPIMsh)
 - System Name Server (EcPISns)
 - Resource Model (EcPIRpRm, EcPIRm)



- Data Processing Subsystem is composed of three computer software configuration items (CSCIs):
 - PRONG
 - » Provides the services required to manage and monitor the Science Data Processing environment, which executes Science Software items (PGEs) and produces data products
 - Algorithm Integration & Test Tools (AITTL)
 - » Set of tools used for test and integration of new science software, new versions of science software, and user methods into the Science Data Processing operational environment
 - Science Data Processing (SDP) Toolkit
 - » Provides a set of software libraries which are used to integrate Science Software into the ECS environment



PRONG CSCI

- AutoSys/AutoXpert
- Job Management (EcDpPrJobMgmt)
- Resource Management
- Data Management (EcDpPrDM)
- PGE Management (EcDpPrRunPGE)
- Execution Management (EcDpPrEM)
- Data Preprocessing (EcDpPrAm1AncilliaryDPREP and EcDpPrReplaceEphemeris)
- Quality Assurance Monitor (QAMonitor)
- Deletion Server
- Sybase SQL Server

Production Requests



- Production planning at the Distributed Active Archive Centers (DAACs)
 - process by which the Production Planner notifies the Planning Subsystem (PLS) of the science processing jobs that are to be processed and what data to process
- Science Software (SS)
 - does the actual data processing
 - is developed at Science Computing Facilities (SCFs)
 - is embodied in Product Generation Executives (PGEs) when the software is integrated into the ECS production processing environment



PGEs

 science software code (e.g., executable programs or shell scripts) that contain the instructions for processing data to create the desired products

Production Request (PR)

- Production Planner defines ECS science data processing jobs in terms of PRs
- A PR is an order for data to be produced by the data processing system
- A single PR may specify...
 - » several jobs that are to be run over a period of time
 - » a single job producing a single set of data



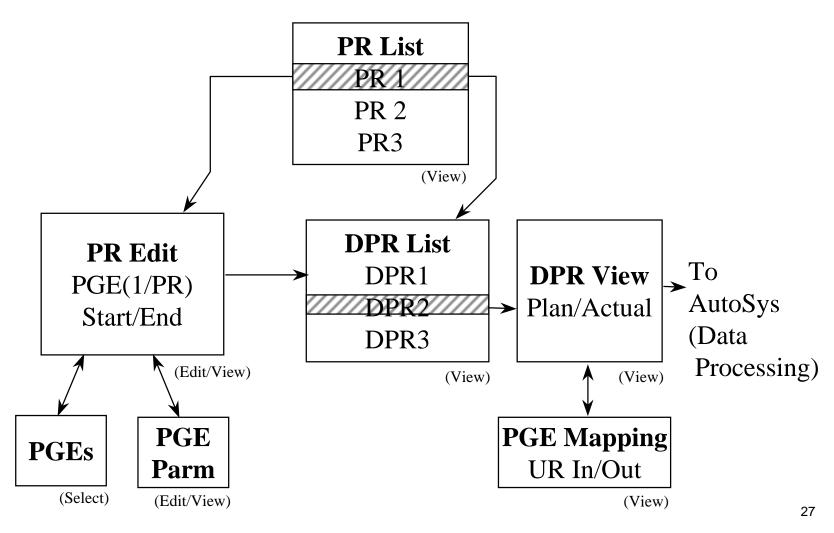
- Production Request (Cont.)
 - may apply to the processing of new data (standard PRs or standing orders)
 - may apply to the reprocessing of existing data (reprocessing PRs)
 - each PR identifies a specific PGE for generating a particular type of product
 - » some PGEs are dependent on others; i.e., some PGEs require input data that are the output of other PGEs
 - planning software will recognize and reject a PR when the PR specifies a PGE that requires data from another PGE that has not yet been specified in a PR



Planning Subsystem

- uses each PR to generate either one or a series of Data Processing Requests (DPRs)
 - » each DPR corresponds to one execution of a single PGE
 - » each DPR contains the information that is needed by the SDPS processing function
- checks the availability of the data required for the DPR
- determines what data will be included in the DPR output
 - » so the system can make predictions concerning the future availability of data







Types of Processing

- Routine Processing
 - » pre-defined software production processing that is periodic and keyed to data arrival
- Reprocessing
 - » using a new, improved PGE to process data that had previously been processed with an older version of the PGE
- Ad Hoc Reprocessing
 - » re-running a PGE to achieve a better result
- On-Demand Processing
 - » ad-hoc processing initiated by either the Planning Subsystem or an end-user (as opposed to the Production Planner)



Production Rules

- specify requirements for processing the PGE
- determine conditions under which a PGE may be run
- PGE developers provide ECS with information concerning the production rules that apply to each PGE



- Production Rules (Cont.)
 - During Science Software Integration and Test (SSI&T) at the DAAC information concerning the production rule(s) applicable to the PGE is included in Object Description Language (ODL) files...
 - » PGE metadata ODL file
 - » ESDT metadata ODL files (describing input and output)
 - » Tile metadata ODL file (for the implementation of tiling)
 - » Orbit model ODL file (for orbit-based processing)



Release 4 Production Rules

- Basic Temporal
 - » Temporal (time) range of inputs matches the temporal range of outputs
- Advanced Temporal
 - » Temporal range of inputs is offset from the expected temporal range of inputs and outputs
- Alternate Inputs
 - » PGE is run with different inputs based on the availability or quality of various alternate input data sets
- Optional Inputs
 - » PGE is run with specified optional inputs if available; otherwise, PGE is run without them



- Release 4 Production Rules (Cont.)
 - Tiling
 - » Input data is chosen on the basis of Instrument Team-defined tiles (geographic areas)
 - Intermittent Activation
 - » Every nth DPR is activated; all other DPRs are skipped
 - Metadata-Based Conditional Activation
 - » DPR is run only if metadata value(s) meet(s) certain criteria
 - Metadata-Based Query
 - » Input granule selection is based on metadata value
 - Data Day
 - » Input data selection is based on Data Day



- Release 4 Production Rules (Cont.)
 - Orbital Processing
 - » Selection of input times is based on orbit information
 - PGE Exit Conditions
 - » An error message is provided or PGE activation is prevented depending on the value of a PGE exit code



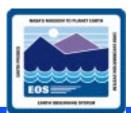
Basic Temporal Production Rule

- Time range for each input of the relevant Earth Science Data Type (ESDT) required by the PGE matches the time range of the output
- SSI&T team enters the following types of temporalrule information in the PGE metadata ODL file:
 - » PGE Schedule Type Time (as opposed to "Orbit" or "Tile")
 - » Processing Boundary Time boundary on which the PGE runs
 - » Processing Period Interval between PGE runs (e.g., "DAYS=1")

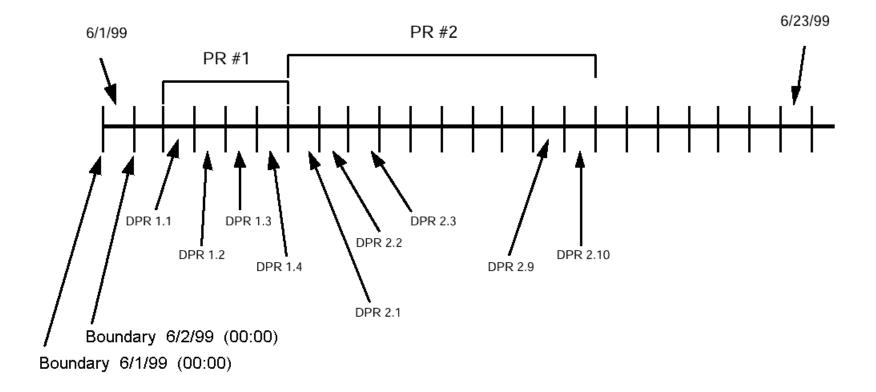


- Basic Temporal Production Rule (Cont.)
 - SSI&T team enters following types of temporal-rule information in the ESDT metadata ODL file:
 - » Processing Boundary Time boundary on which the data are collected
 - » Processing Period Interval of data collection (e.g., every hour, every two hours, every day)

Example of Basic Temporal Production Rule



= Period (one day)





Advanced Temporal Production Rule

- Input data date/time requirements may be offset from either the start or the end of the PGE processing period (or both) to acquire the necessary granules of a specified ESDT
- If the offset's delta (variation from the processing period) is negative, the input date/time is moved backward in time
 - » A positive delta moves the date/time forward in time
 - » Different deltas may be applied to each input ESDT



- Advanced Temporal Production Rule (Cont.)
 - SSI&T team enters the same types of information that are entered for the Basic Temporal Production Rule in the PGE metadata ODL file
 - PGE Schedule Type
 - » Processing Boundary
 - » Processing Period
 - In addition, the following types of information must be included:
 - » Begin Period Offset Number of seconds to add (+) or subtract (-) from the start collection time when requesting data
 - » End Period Offset Number of seconds to add or subtract from the end collection time when requesting data



- Advanced Temporal Production Rule (Cont.)
 - Example modification of the Basic Temporal Production Rule example with the addition of a twohour (7200-second) offset at the beginning
 - PGE metadata ODL file statements include...
 - » SCHEDULE_TYPE = "Time"
 - » PROCESSING_BOUNDARY = "START_OF_DAY"
 - » PROCESSING PERIOD = "DAYS=1"
 - » BEGIN_PERIOD_OFFSET = -7200
 - » END PERIOD OFFSET = 0
 - ESDT metadata ODL file statements include...
 - » PROCESSING_BOUNDARY = "START_OF_DAY"
 - » PROCESSING_PERIOD = "HOURS=2"



- Advanced Temporal Production Rule (Cont.)
 - First (PR #1) for the time between 06/03/99 00:00
 and 06/06/99 24:00
 - » Creates a DPR (DPR 1.1) to process the first period (06/03/99 00:00 through 06/03/99 24:00); however, when PLS requests the input data for processing the PGE, it will include a request for data for 06/02/99 22:00 through 24:00 (the 7200 seconds preceding the beginning of the processing period)
 - » Continues producing DPRs (DPR 1.2 through DPR 1.4) including an input data offset of two hours until it reaches the end of the period that contains the end time of the PR
 - Second (PR #2) for the time between 06/07/99 00:00 and 06/16/99 24:00
 - » When PR #2 is entered, the same process takes place, producing DPR 2.1 through DPR 2.10



- Alternate Inputs Production Rule
 - Applies to the type of PGE that can use any one of several inputs for one of its input data sets
 - During SSI&T a hierarchy of alternative input granules/files is specified in the PGE metadata ODL file
 - » One input is considered the "primary" input
 - » Others are identified as "alternate" inputs
 - » Each input has an associated time-out period
 - » If the input does not become available within the time-out period, processing will wait for the next alternate through its time-out period and so on
 - » If the primary input or a higher-priority alternate becomes available during the waiting period for a lower-priority alternate, the PGE is activated with the available higher-priority input



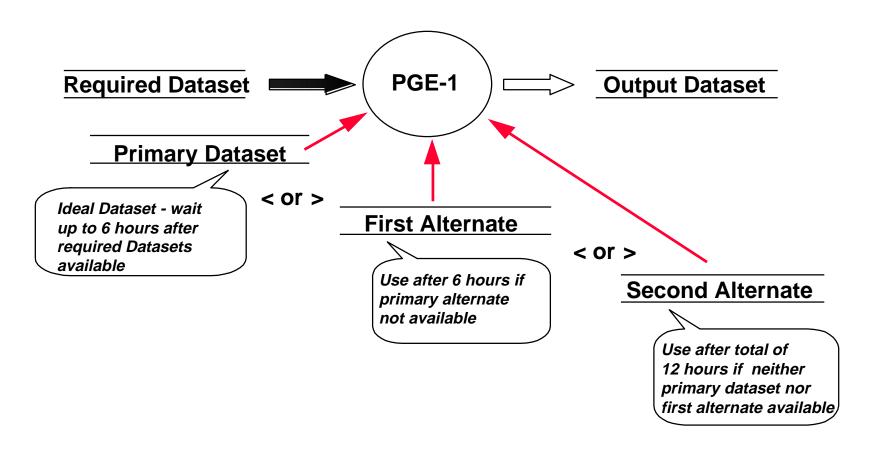
- Alternate Inputs Production Rule (Cont.)
 - PGE metadata ODL file statements include...
 - » Input_Type Either "Primary" (first choice) or "Alternate" (all other choices)
 - » Number Needed Number (typically one) of the alternate data sets (from the group of alternatives) required by the PGE
 - » Object Alternate_Input
 - » Category Name of list of alternates (same for every alternate in the list)
 - » Order Number indicating the alternate's place in the hierarchy [i.e., 1 (first), 2 (second), etc.]
 - » Timer Number of days/hours/seconds to wait for alternate (e.g., "HOURS=6")



- Alternate Inputs Production Rule (Cont.)
 - PGE metadata ODL file statements include...
 - » WaitFor "Y" or "N" indicating whether the PGE should continue without waiting for this alternate (should be "N" for all but the last alternate in the list)
 - » Temporal Indicates whether the alternate data type has a temporal component (i.e., "Y" or "N"; "N" indicates "use the most currently produced")
 - » End Object Alternate_Input
 - An example of PGE metadata ODL file entries for Alternate Inputs is shown in Table 1 in the student text
 - Production Planner can make some modifications to the alternate input specifications (e.g., timer settings) when creating a production request using the Production Request Editor

Example of Alternate Inputs Production Rule







Optional Inputs Production Rule

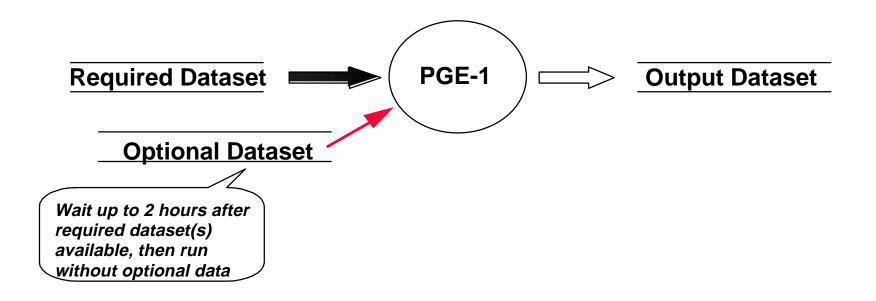
- Applies to the type of PGE that can be run either with or without optional input(s) in addition to the required input(s)
- PGE would not be activated until the expiration of the time-out period(s) for the optional input(s)
- Multiple optional input time-out periods count down at the same time
- PGE would be activated under either of the following conditions:
 - » Activated with the optional input(s) upon the availability of optional input(s) during the time-out period(s)
 - » Activated without the optional input(s) at expiration of the time-out period(s) for the optional input(s)



- Optional Inputs Production Rule (Cont.)
 - PGE metadata ODL file statements include...
 - » Input_Type Optional
 - » Object Optional_Input
 - » Category Name of the list of optional inputs
 - » Order Number indicating the option's place in the hierarchy (i.e., first, second, etc.)
 - » Timer Number of days/hours/seconds to wait for the optional input (e.g., "HOURS=2")
 - » Temporal Indicates whether or not the optional data type has a temporal component (i.e., "Y" or "N")
 - » End Object Optional_Input

Example of Optional Inputs Production Rule







Tiling Production Rule

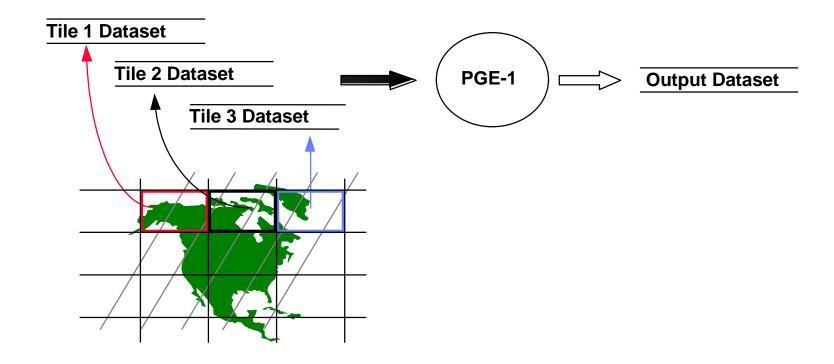
- Applied to a type of PGE that is set up to run for a series of pre-defined areas (tiles) on the earth's surface
- PGE developers must create tile definition files to describe all of the tiles
- Production Planner specifies the relevant Tile ID (which becomes a run-time parameter) when creating a production request
- Planning Subsystem uses the definitions to query the Data Server for input data granules relevant to the tile specified in the production request



- Tiling Production Rule (Cont.)
 - PGE metadata ODL file statements include...
 - » PGE Schedule Type Tile
 - » Tile Scheme Name of the tile scheme defined in the tile metadata ODL file
 - Tile metadata ODL file statements include the Tile Scheme (name of the tile scheme) and the following types of entries for each tile:
 - » Tile ID Unique identifier used to refer to the tile
 - » Tile Description Description of the tile
 - » Coordinates Coordinates of the four (or more) corners of the tile

Example of Tiling Production Rule







- Intermittent Activation Production Rule
 - PGE is set up to run on every nth instance of input data
 - To implement Intermittent Activation the Production Planner supplies the following information (via the Production Request Editor) when creating a production request:
 - Number to Skip Number of DPRs to be skipped (not executed)
 - » Number to Keep After skipping the specified number of DPRs, how many are to be kept
 - » Skip First (button on the Production Request Editor) -Selected to skip the first DPR (not selected if the first DPR is to be run)

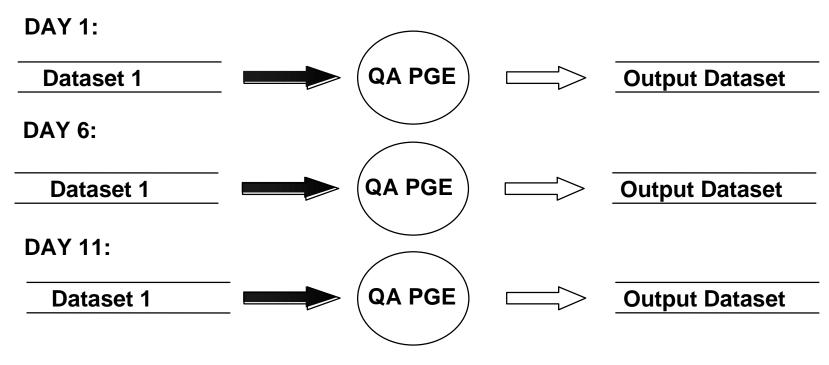


- Intermittent Activation Production Rule (Cont.)
 - Planning Subsystem uses the "Intermittent DPR" information from the PR to establish a pattern of execution
 - Pattern is effective for the single PR in which the "number to skip" and the "number to keep" are specified
 - » Pattern is not maintained between PRs

Example of Intermittent Execution Production Rule



Run PGE on same data set every five days





- Metadata-Based Conditional Activation Production Rule
 - Determination of whether a given DPR should be run is based on a check of the inventory attributes and product-specific attributes (PSAs) of one or more of its input data sets
 - Checks and queries may be specified for more than one ESDT input and on more than one inventory attribute and PSA
 - Multiple default values for metadata checks and queries are implemented as a logical "AND" capability
 - » There is currently no "OR" capability



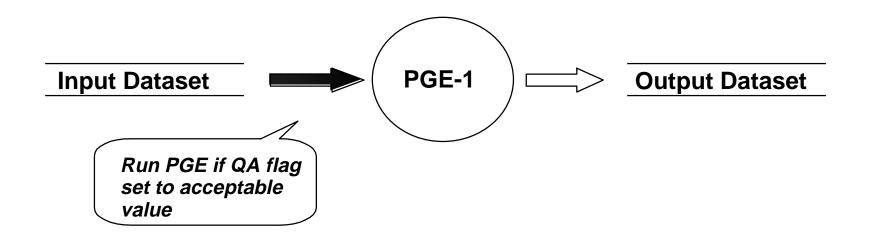
- Metadata-Based Conditional Activation Production Rule (Cont.)
 - Default values for metadata checks are entered initially during SSI&T
 - Production Planner can modify the values using the Production Request Editor when a production request is entered
 - PGE metadata ODL file statements include...
 - » Object Metadata_Checks
 - » Parm_Name Name of the metadata parameter (e.g., AutomaticQualityFlag) to be checked
 - » Operator Logical operator (i.e., ==, !=, <, <=, >, >=) on the parameter value
 - » Value Value to be checked against (e.g., "passed")



- Metadata-Based Conditional Activation Production Rule (Cont.)
 - ESDT metadata ODL file statements include...
 - » Object Metadata_Definition
 - » Parm_Name Name of the metadata parameter (e.g., AutomaticQualityFlag) to be checked
 - » Container Name Name of the container or group that includes the parameter value
 - » Type Type of parameter (e.g., integer, float, string)

Example of Metadata-Based Conditional Activation







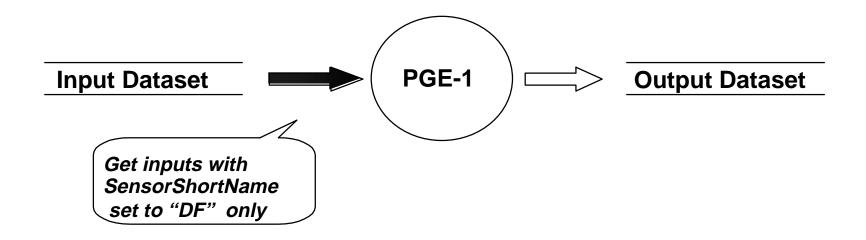
- Metadata-Based Query Production Rule
 - Metadata values are used to refine the list of inputs acquired for the run of a PGE
 - » Metadata-based query is concerned with the selection of appropriate input data for a run of the PGE
 - » Metadata-based activation focuses on whether or not the PGE should be run
 - Metadata-based query can be used in conjunction with metadata-based activation
 - Both of the metadata-based rules have an optional parameter called Database_Query
 - » Causes the query to be performed on a value retrieved from the PDPS database rather than on the value for the inventory attribute or PSA



- Metadata-Based Query Production Rule (Cont.)
 - PGE metadata ODL file statements include...
 - » Object Metadata_Query
 - » Parm_Name Name of the metadata parameter (e.g., AutomaticQualityFlag) to be queried
 - » Operator Logical operator (e.g., ==) on the parameter value
 - » Value Value for comparison with the parameter value returned from the database query
 - » Database Query Value to be obtained from the PDPS database
 - Same types of information that are provided in a metadata-check ESDT metadata ODL file must be included in the ESDT metadata ODL file for each input subject to a metadata query

Example of Metadata-Based Query







Data Day Production Rule

- A type of metadata-based query in which the metadata parameter to be queried is Data Day
 - » Data Day is internally tracked within ECS
 - » Data Day is defined by the dynamic run-time parameters known to the PDPS database as "start dataday" and "end dataday"
 - » When a Production Planner creates a PR that invokes the Data Day Production Rule, the current "start dataday" and "end dataday" parameters are passed to the PGE as run-time parameters
 - » The parameters are used in a metadata-based query to identify granules that meet the search criterion (Data Day)
 - » Activation of the PGE is based either on the availability of all granules for the Data Day or on the SSI&T specified minimum number of granules



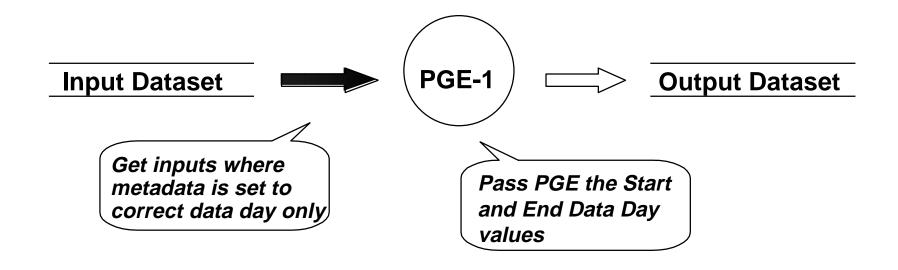
- Data Day Production Rule (Cont.)
 - PGE metadata ODL file statements include...
 - » PGE Schedule Type Time
 - » A PCF entry is created for run-time parameters specifying Start Data Day and End Data Day
 - » Metadata query objects are created for inputs that are to be requested by Data Day (e.g., "StartDataDay" and "EndDataDay")
 - » A PCF entry is created for the run-time parameters that will specify Start Data Day and End Data Day values (e.g., PGE_PARAMETER_DYNAMIC_VALUE = "START DATA DAY")

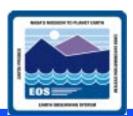


- Data Day Production Rule (Cont.)
 - ESDT metadata ODL file statements include...
 - » Object Metadata_Definition
 - » Parm_Name Name of Data Day parameter
 - » Container_Name AdditionalAttributes [because Data Day is in a product-specific attribute (PSA)]
 - » Type string
 - » End Object Metadata_Definition

Example of Data Day







Orbital Processing Production Rule

- Activation on the basis of spacecraft orbit (rather than a temporal range or tile)
- Orbit numbers and corresponding temporal ranges are maintained in an internal table
 - » Table is updated frequently (approximately every ten days)
- Temporal range of the input and output data is determined by look-up table
- PGE is not activated unless all granules for an orbit are available
- Production Planner specifies the orbit number range when creating each production request for an orbit-based PGE



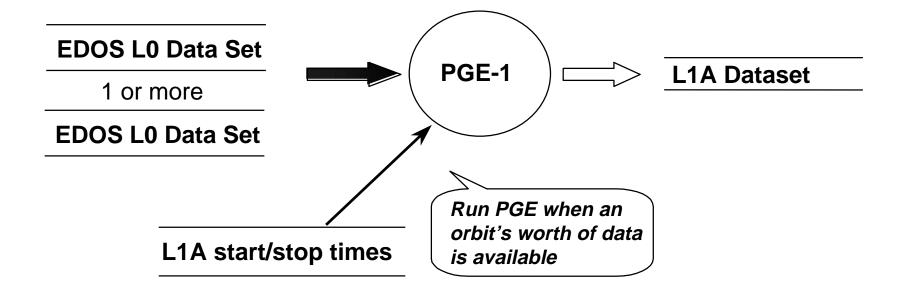
- Orbital Processing Production Rule (Cont.)
 - In addition to the PGE metadata ODL file and applicable ESDT metadata ODL file(s), the following files are necessary for the implementation of orbital processing:
 - Orbit Model ODL file
 - » Path Model ODL file (if path mapping is desired)
 - PGE metadata ODL file statements include...
 - » Schedule_Type Orbit
 - » Processing_Boundary Start_Of_Orbit
 - » Processing_Period Number of orbits ["Orbits=X" (where X is an integer value)]



- Orbital Processing Production Rule (Cont.)
 - Orbit model ODL file statements include...
 - » Platform Platform of spacecraft
 - » Orbit_Start Start time of orbit
 - » Orbit_Number Number of orbit
 - » Path_Number Number of the path (0-233) that matches the specified orbit number

Example of Orbital Processing







PGE Exit Conditions

- Use of PGE exit conditions in managing production is different from the preceding types of production rules because it occurs after a PGE has run
- Exit condition of a PGE may result in an exit message to operations personnel
- Exit condition of a PGE may determine whether a subsequent PGE will be activated



- PGE Exit Conditions (Cont.)
 - Key to implementing the use of PGE exit conditions in production is the PGE exit code
 - » A PGE that runs to successful completion returns an exit code of 0 (zero)
 - » Any exit code other than 0 indicates some kind of error condition
 - » PGE developers may specify exit messages for exit codes 203 222
 - » All other exit codes are system-defined
 - Exit Condition Definition
 - » Specifies messages for various PGE exit codes
 - Exit Condition-Based Activation
 - » Determines whether or not to activate a PGE based on the value of an exit code



PGE Exit Conditions (Cont.)

- Examples
 - » Two related PGEs, PGE#2 and PGE#4
 - » PGE#2 provides an example of exit code definition
 - » PGE#4 is an example of exit condition-based activation
 - » The PGE metadata ODL file for PGE#4 specifies that the activation of PGE#4 depends on PGE#2 having an exit code that does not equal 203
 - » If PGE#2 exits with code of 203, PGE#4 will be prevented from running



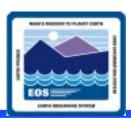
- Production Planning Considerations
 - Production Request (PR) is a template request to generate a particular data product
 - » results in a production run of the associated SCFprovided PGE
 - PR specifies a range over which the data products are to be produced or the PGEs are to be scheduled
 - » temporal (date/time)
 - » orbit
 - » tile

Production Requests (Cont.)



- Production Planning Considerations (Cont.)
 - During normal operations Production Planner should not have to add PRs to the PDPS database very frequently
 - » PR might request that the data product be produced for only a single day's data
 - » PR might request that data products be produced for every opportunity of input data for several months
 - » Early in a mission the SCF may prefer to request processing for a short time period only
 - » SCF reviews the quality of the products and notifies the Production Planner of the need for any changes to the PR
 - » When the SCF has developed a good understanding of the instrument's behavior, the team may be comfortable requesting processing for months at a time

Production Requests (Cont.)



- Production Planning Considerations (Cont.)
 - DAAC operations may have operational reasons for wanting to issue processing requests for a limited time period
 - Production Planner has to balance the various considerations when determining whether or not to create or update a PR
 - Planning decisions are made on the basis of locally defined planning strategies for supporting the SCFs' data processing needs
 - Production Planner must coordinate with the Resource Planner
 - » before planning production
 - » resolve all resource allocation issues
 - » determine what resources are available for use in processing

Launching the Production Request Editor



- Production Request Editor-Associated Applications
 - Production Request Editor
 - Subscription Editor
 - Subscription Manager

Production Planning Icons





Production Request Editor GUI Icon



Production Planning Workbench GUI Icon

Launching the Production Request Editor (Cont.)



Procedure

- Access the command shell
- Log in to the Planning Subsystem host
- Set the DISPLAY environmental variable
- Set the ECS_HOME environmental variable
- Start the Production Request Editor GUI in the appropriate mode

PR Editor Introductory GUI





Creating/Updating a PR (Cont.)



Procedure

- Select the PR Edit tab of the Production Request Editor GUI
- Select the PGE to be included in the Production Request
- If applicable, specify new metadata check value
- If applicable, modify alternate input parameters
- Specify the data requirements
 - » Beginning and ending dates and times
 - » Orbits (from/to)
 - » Tile
- If applicable, specify Intermittent Activation requirements
- Save the Production Request

PR Edit GUI



Production Request Editor	· 🗆
Eile Edit	<u>H</u> elp
Planning PR Edit PR List DPR View DPR List	
PR Name: New Origination Date: (UTC) PR Type: Routine Originator: Priority:	01/31/99 14:04:34
Satellite Name: Instrument Name:	PGE
PGE Version: Profile Id: 0 A	Metadata Checks
© Collection Time	Time 20th1t
End 01 / 31 / 1999 - 11 : 04 : 34 4 5	From 0
Intermittent DPR Skip 0 Keep 0	_l SkipFirst
Comment:	

PGE Selection GUI



PCE Selection						
PGE Selec	Tion					
Full delet						
PGE Name	PGE Version	Profile Id	Satellite Name	Instrument Mame		
ACT	syn1		AMI	ASTER	ш	
ACTPGE		0	EOSAM1	ASTER	ш	
ACTPGE ETS	1 syn1		EOSAM1 AN1	ASTER ASTER	ш	
ETSPGE	I I	i	EOSAMI	ASTER	ш	
ETSPGE		ĭ	EUSAMI	ASTER	ш	
DSTPGE		ö	EUSAMI	ASTER	ш	
DSTPGE			EOSAMI	ASTER	ш	
ETS	synl		ANT	ASTER	ш	
ETSPGE			EOSAMI	ASTER		
ETSPGE			EOSAMI	ASTER	ш	
MISR_PGE09			MISR	MISR	ш	
MPGE1	201AA 201AF		MISR	MISR	ш	
MPGET	201AN		MISR MISR	MESR MESR	ш	
MPGET	20184		MISR	HISR	ш	
MPGET	2018F		MISR	HISR	ш	
MPGET	201CA		MISR	MISR	ш	
MPGE1	201CF		MISR	HISR	ш	
MPGE1	2010A		MISR	MISR	ш	
MPGE1	2010F		MISR	MISR	ш	
MPGE7	201		MISR	MISR	ш	
MPGESC	201		MISR	MISR	ш	
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PGE Parameter Mappings GUI



	PGE Paran	neter Mappings	
PR Name: Day2			
Parameter Mapping			
1	_		
Parameter Name	Logical Id	Default Value Override Value	. Desc
Satelliteld	1200	9703381	NON
FirstMissionDay	1201	0	NON
ProcessFirstDayOnly	1202	1	NON
fdf.next.nat.met	1248	1100:1	NON
ProcessEphemeris	1249	on	NON
Satelliteld	1250	107	NON
FirstMissionDay	1251	0	NON
QaWindowSize	1252	5	NON
QaShortGapInterval	1253	0.75	NON
QaLongGapInterval	1254	10.0	NON
QaRedLowAbsolute	1255	-1.0	NON
QaYellowLowAbsolute	1256	-0.5	NON
QaYellowHighAbsolute	1257	0.5	NON
QaRedHighAbsolute	1258	1.0	NON
QaYellowDifference	1259	0.5	NON
QaRedDifference	1260	1.0	NON
QaYellowSampleSD	1261	8.610	NON
QaRedSampleSD	1262	15.544	NON
EulerAngleOrder	1268	3,2,1	NON
attitude.next.nat	1298	1153:1	NON
ProcessAttitude	1299	on	NON
3			- 2
Hnd [
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OV.		annul .	Lista
OK		Cancel	Help

Metadata Checks GUI



MetaDataChecks
PGE ID: PGE07#1 . 0#01
InputDataType [4]
MOD02HKM#0 MOD03#0 MOD35_L2#0
FI
Find [
MetaDataField Operator Value Type
Find [
MetaDataField: Value:
OK Apply Cancel Help

Alternate Input Values GUI



	III.	
Į	- AlternateInputValues	
	PGE ID: PGE07#1.0#01	
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1	FI 13	
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ı	FI 13	
	Find [
1		
	DataType:	
-	Winner too too M	
	Timer	
	(a) [1]	11-1
	Ok Apply Cancel	Help

PRE File Selection Window ("Open" or "Save As")



File Selection
Select File
Filter:
Production Requests:
PR_1 PR_2 PR_3 PR_4 PR_5
Selection Ĭ
OK Filter Cancel Help

Editing/Modifying a PR



Procedure

- Select the PR Edit tab of the Production Request Editor GUI
- Open the PR to be edited/modified
- Make the necessary edits/modifications
- Save the PR

Deleting a PR



Procedure

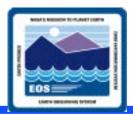
- Select the PR List tab of the Production Request Editor GUI
- Select the PR to be deleted from those listed
- Delete the PR

PR List GUI



E		Production R	equest l	Editor		·
Fil	e <u>E</u> dit					Help
Pla	nning PR Edit	PR List DPR View	DPR LI	st)		
		Production I	Request	s		
	PR Name	PGE ID	Priority	Start	End	FR
		MODPGE01#syn1#01	0	03/09/98 18:10:55		
	PGE07_PR_T	PGE07#1.0#01	5	08/05/96 11:54:00	08/05/96	
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Reviewing/Deleting Data Processing Requests (DPRs)



- Data Processing Requests (DPRs)
 - generated automatically by the PDPS
 - generated automatically from a PR (which specifies a PGE)
- DPR information is used by...
 - Data Processing Subsystem
 - AutoSys production scheduling software
- The Production Planner can review DPRs
- Operations personnel cannot edit DPR fields

Reviewing/Deleting DPRs (Cont.)



- DPR List (Production Request Editor)
 - Each line represents a DPR, i.e., a job that will be run when all data and resource needs have been satisfied
 - For each DPR the list includes...
 - » DPR identification
 - » relevant PGE
 - » name of the corresponding PR
 - » data start date and time, etc.
 - may be filtered, so that only DPRs with certain characteristics are displayed

Reviewing/Deleting DPRs (Cont.)



- Data concerning an individual DPR (Production Request Editor)
 - PGE parameters
 - UR File Mappings (PGE File Mappings)
 - » input and output files for a particular DPR on the PGE File Mappings GUI
 - » GUI displays one line of information for each file that may be used by or be produced by the PGE

UR File Mappings GUI



1	UR File Mappings
,	File Mappings
I	Input Data
ı	Logical Id Granule Id Start Time Stop T
١	700001 MOD02HKM#0080596155400 08/05/96 15:54:00 08/05 600000 MOD03#0080596155400 08/05/96 15:54:00 08/05
١	422500 MOD35_L2#0080596155400 08/05/96 15:54:00 08/05
١	
١	
ı	Find]
١	Output Data
ı	Logical Id Granule Id Start Time Stop Ti
	210100 MOD10_L2#0080596155400 08/05/96 15:54:00 08/05/
ı	
١	Find]
	OK Help

DPR List GUI



File Edit PR List DPR View DPR List Production Request: PGE07_PR_T Filter Data Processing Requests DPR Id PGE1d PR Name Data Start Time PGE07#1.0#01080596155400 PGE07#1.0#01 PGE07_PR_T 08/05/96 15:54 Find : Status:	-		Pro	duction Re	equest Ed	itor		·
Filter Data Processing Requests DPR Id PGE Id PR Name Data Start Time PGE07#1.0#01080596155400 PGE07#1.0#01 PGE07_PR_T 08/05/96 15:54 Find [File Edit							Help
Filter Data Processing Requests DPR Id PGE Id PR Name Data Start Time PGE07#1.0#01080596155400 PGE07#1.0#01 PGE07_PR_T 08/05/96 15:54 Find [Planning	PR Edit	PR List D	PR View	DPR List	ì		
DPR Id PGE Id PR Name Data Start Time PGE07#1.0#01 PGE07#1.0#01 PGE07_PR_T 08/05/96 15:54								
DPR Id PGE Id PR Name Data Start Time PGE07#1.0#01 PGE07#1.0#01 PGE07_PR_T 08/05/96 15:54								
DPR Id	Producti	on Request	E PGE07_PF	LT		7		
DPR Id								
PGE07#1.0#01080596155400 PGE07#1.0#01 PGE07_PR_T 08/05/96 15:54	Filter			Data Proce	ssing Re	quests		
PGE07#1.0#01080596155400 PGE07#1.0#01 PGE07_PR_T 08/05/96 15:54	DOD 14			PCE IA		PO Name	Data Start Time	TE
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Reviewing/Deleting DPRs (Cont.)



- Procedure (Reviewing DPRs)
 - Select the Data Processing Request List by clicking on the DPR List tab
 - Select a Production Request from the list on the option button
 - Select a DPR to be reviewed from the list of Data Processing Requests, then click on the DPR View tab
 - Select File → Open from the pull-down menu
 - Select the DPR to be reviewed from the list of DPRs
 - Review the selected DPR
 - » Click on the PGE Parameters... button to view the PGE parameters associated with the DPR
 - » Click on the PGE File Mappings... button to view the UR file mappings (PGE input and output data)

DPR View GUI



Production Reque	st Editor	
le Edit		He
anning PR Edit PR List DPR View DPR	List	
ALL Times in UTC		
Data Processing Request Identification		
DPR Name:	PR Nane:	
		
Origination Date:	_	
Originator:		
PGE ID:	PGE	
	Parameters	
Data Start Time:	per pal-	
Data Stop Time:	PGE File Mappings	
Request Data and Status		
Predicted Start		
Date:	Time:	
Actual Start:		
Date:	**	
unce:	Tine:	
Priority:	Status:	

DPR File Selection GUI



File Selection
Select File
Filter:
Data Processing Requests
PGE07#1.0#01080596155400
Selection [PGE07#1.0#01080596155400
J GEO/#1.0#01080390133400
OK Filter Cancel Help

Reviewing/Deleting DPRs (Cont.)



- Procedure (Deleting a DPR)
 - Select DPR List tab on the Production Request Editor GUI
 - Select the appropriate Production Request from the list on the option button
 - Select the DPR to be deleted from the list of Data Processing Requests
 - Delete the DPR

Submitting or Withdrawing a Subscription



Subscription Editor

- Character-based user interface
- Used to either submit or withdraw subscriptions for notification of data arrival (i.e., insertion of data into the archive) or other subscribable system events
- Subscriptions may be submitted on behalf of a general user or on behalf of the Planning Subsystem (i.e., the PLS Subscription Manager)

Submitting or Withdrawing a Subscription (Cont.)



Procedure

- Access the command shell
- Log in to the Planning Subsystem host
- Start the subscription editor in the appropriate mode
- Type responses to subscription editor prompts

Launching Planning Workbench-Related GUIs



- Planning Workbench-Related Applications
 - Subscription Manager
 - System Name Server
 - Message Handler
 - Resource Model
 - Planning Workbench
 - Production Timeline
 - Production Strategies

Production Planning Icons





Production Request Editor GUI Icon



Production Planning Workbench GUI Icon

Launching Planning Workbench-Related GUIs

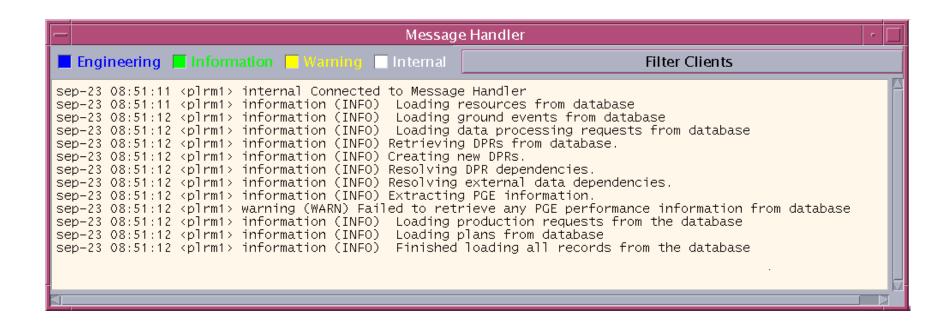


Procedure

- Access the command shell
- Log-in to the Planning Subsystem host
- Set the DISPLAY environmental variable
- Set the ECS_HOME environmental variable
- Start the Planning Workbench GUI in the appropriate mode
- Start the Production Strategies GUI in the appropriate mode

Message Handler GUI





Planning Workbench



Planning Workbench	·
File Options	Help
Plan Name: PGE07_PR_TRAINING Status: CANDIDATE Strategy: Training Baseline Activate Rollover Time:	
Comments:	
I	
Production Requests	
Unscheduled:	
NAME PRIORITY	
MODPGED1_PR 0	ū
schedule: 🔻 unschedule: 🛕	
Scheduled:	
NAME PRIORITY	
PGE07_PR_T 365	
Prioritize Refresh	

Planning Timeline GUI



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	HORBOR .	MURROUN.	-	9	+)		(+)	+	(0)	+			.+	+	-			+	+	3	•	4	+	-	+		4	+3			
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	19,71901,710	PE,20011,010	-	1	1		-	1	+	+		+	+		+	-	13	+	+	1		+		.*				+	-	+	
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Production Strategies GUI



-	ProductionSt	rategies	•
<u>File Edit Options</u>			<u>H</u> elp
Produc			
PR Type	User Type	PGE Type	User Selected
Weight [44.444443] Default [5]	Weight [22.222221] Default [5	Weight [22.222221] Default [5	Weight [11.1111111
Value Priority Routine 2 OnDemand 5 Reprocessing 5	alue Priority PAAC Manager 2 perator 1 esearcher 7 cientist 3 Find I	Value Priority GE07#1.0#01 2 Find I	Total Weight (must total 100) 99.999992 Normalize
Priority 5 Type List Routine OnDemand Reprocessing	Add	Modify	Inter DAAC Delta Priority [50 Late Start Delta Priority 50

Creating a New Production Plan

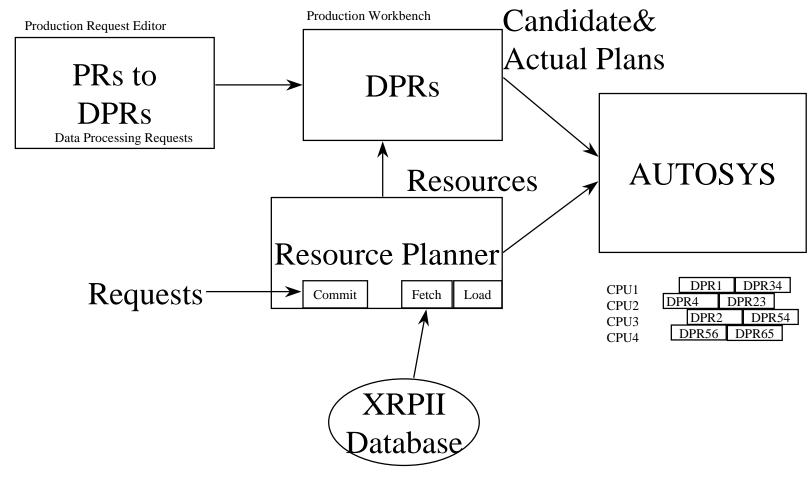


Planning Workbench

- is used for creating a plan for production data processing at the DAAC
- provides the means by which the Production
 Planner selects specific PRs whose DPRs are to be run
- provides a forecast of the start and completion times of the jobs based upon historical experience in running these PGEs
- when the generated plan is "activated," the information included in the plan is transferred to the Data Processing Subsystem and loaded into the Platinum AutoSys tool where production processing is managed

Creating a New Production Plan: Planning Workbench





Creating a New Production Plan (Cont.)



Monthly plans

- developed for the coming month and one or two months in advance
- produced, reviewed, updated, published and distributed approximately two weeks before the beginning of the month
- used to establish a baseline against which production targets can be measured

Weekly plans

- produced, reviewed, updated, published and distributed approximately five days before the beginning of the coming week
- used to produce a baseline for comparison of planned vs. actual production results

Creating a New Production Plan (Cont.)



- Daily plan or schedule
 - produced each day for the next processing day
 - developed from the current weekly plan
 - » adjusted to reflect the actual processing accomplished and the actual resources available at the time the daily schedule is generated

Production Strategy



- High-level plan that the Production Planner prepares to notify the Planning Workbench of the rules for priorities and preferences in the processing of DPRs
- Production Strategies work on two levels:
 - Updating lists of DPR attributes so that each value an attribute can have is tied to a particular priority
 - Changing the weight that each attribute's priority is given
- In addition, weight is given to the priority selected by the user who entered the request

Production Strategy (Cont.)



- Total weights assigned to PR Type, User Type, PGE Type and User Selected must equal 100
- Planning Workbench uses the data to calculate a priority for each DPR in a Production Plan
- Deltas can be added to the calculated priority based on the following two conditions:
 - Inter-DAAC Delta
 - » jobs produce data needed by other DAACs
 - Late Start Delta
 - » jobs have been waiting in the Production Queue for more than a day

Production Strategy: Calculating Priority for a DPR



PR TYPE

Weight .45

On Demand10Routine6Reprocessing4Default5

PGE

Weight .20

MODIS 01 5
MOD09:L2G 3
MOD09:L3 6
MODIS 02 5
Default 5

The operator can also change the weights given to each list according to the DAACs current production priorities

DPR id:

MOD09:L2G 060199 14 1234

User Type: Scientist

PGE:

MOD09:L2G

Routine request

Tile 14

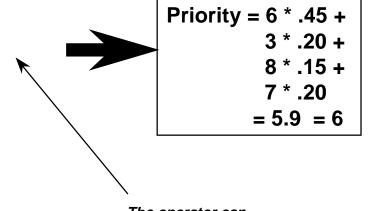
Cluster id: 4

User-selected Weight: 7



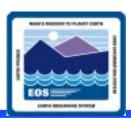
Weight	15
Operator	5
DAAC Manag	jer 7
Researcher	10
Scientist	8
Default	5

User-Selected
Weight .20



The operator can change any weight or priority on any strategy list.

Defining a Production Strategy



Procedure

- Select priorities for the values for each of the following three DPR attributes (as needed):
 - » PR Type
 - » User Type
 - » PGE Type
- Type weights for the preceding three DPR attributes (as needed)
- Type a weight in the User Selected field
- Click on the Normalize button
- Type delta priority for Inter-DAAC Delta (if needed)
- Type delta priority for Late Start Delta (if needed)
- Save the Production Strategy

Creating a New Production Plan



- Production Planner creates a plan for production data processing at the DAAC
 - selects specific PRs whose DPRs are to be run
 - selects PRs from two lists of PRs
 - » list of available "Unscheduled" PRs
 - » list of "Scheduled" PRs
 - uses arrow buttons to move PRs between lists until the "Scheduled" list contains the desired set of PRs that define the new plan

Creating a New Production Plan (Cont.)



Procedure

- Select applicable Production Strategy
- Move PRs between the Unscheduled and Scheduled lists
- Change the priority of PRs as necessary
- Save the plan
- Activate the plan if applicable
- Save the plan as a baseline plan if applicable
- To quit the Planning Workbench GUI: File → Exit
- After quitting the Planning Workbench GUI, type the command to shut down the Message Handler, System Name Server, and Resource Model

Planning Workbench: Priority Window



	Priority_popup		
Р	roduction	Request(s)	priority:
H			
	ОК	Cance1	Help

Planning Workbench: "Save Plan" GUI



	Sa	ve Plan	
Plans			
NONAME	CANDIDATE		
Plan Namo	es:		
Ok	Apply	Cance1	Help

Reviewing a Plan Timeline



Production Plan Timeline

- graphic, timeline-oriented depiction of a production plan
- displays a set of processing equipment, arranged along the left side of the GUI
- displays some period of time across the top edge of the GUI
- bars on the timeline represent either...
 - » execution of DPRs on processing equipment over a period of time
 - » resource reservations for non-production-related purposes (also called "ground events")
- ground events include such activities as testing, preventive maintenance, or system upgrades

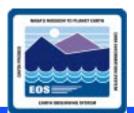
Reviewing a Plan Timeline (Cont.)



Procedure

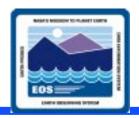
- Adjust the Production Planning Timeline window size and the view of the timeline as necessary
- Select a different plan to be viewed if necessary
- Adjust the time scale (start and end dates and times) as necessary
- Adjust the time span if desired
- Adjust the resources to be displayed on the timeline as necessary
- Adjust timeline color coding if desired/necessary

Open Plan Window



Open Plan			
Items			
PGE07_PR_TRAINING			
Selection			
OK Apply Cancel Help			

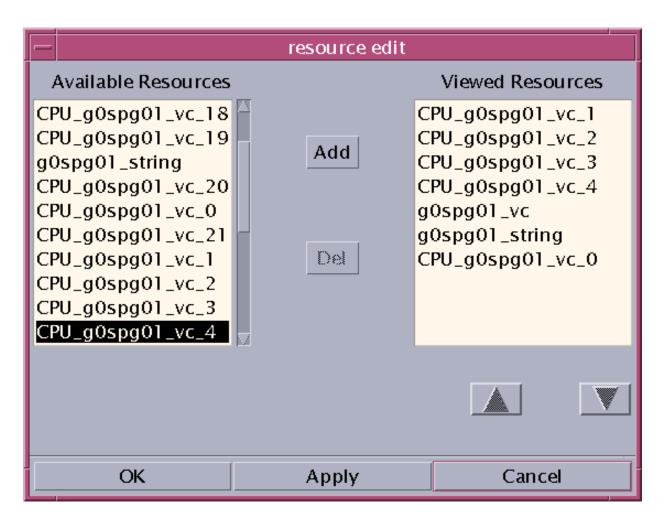
Planning Timeline: Plan Window Edit Window



pl:	plan window edit			
Plan Win Start:	22 APR 1998į	<u>[</u> 00:00:00		
Plan Win End :	23 APR 1998į̇̃	23:00:00		
ОК	Apply	Cancel		

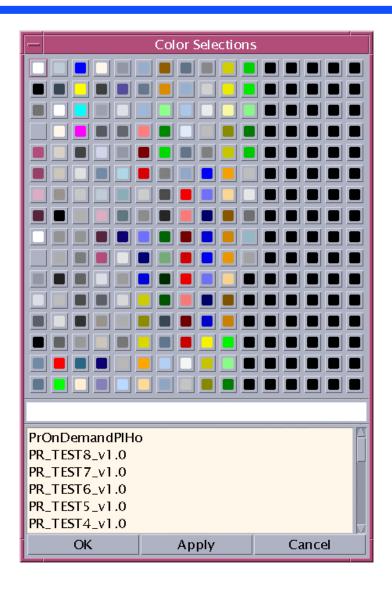
Planning Timeline: Resource Edit Window





Planning Timeline: Color Selections Window





Troubleshooting Production Planning Problems



Troubleshooting:

process of identifying the source of problems on the basis of observed trouble symptoms

Troubleshooting Production Planning Problems



- Problems with production planning can usually be traced to...
 - some part of the Planning Subsystem
 - problems in other ECS subsystems, including (but not necessarily limited to):
 - » Data Processing Subsystem (DPS)
 - » Data Server Subsystem (DSS)
 - » Interoperability Subsystem (IOS)
 - » Communications Subsystem (CSS)

Troubleshooting Production Planning Problems (Cont.)



Troubleshooting table

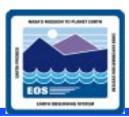
- describes actions to be taken in response to some common Production Planning problems
- if the problem cannot be identified and fixed without help within a reasonable period of time, call the help desk or submit a trouble ticket in accordance with site Problem Management policy

Troubleshooting Production Planning Problems (Cont.)



Symptom	Response
Unable to log in to the Planning Subsystem host (e.g., g0pls01).	Check with the Operations Controller/System Administrator to ensure that the host is "up."
GUI not displayed when the start-up script has been properly invoked.	Ensure that the DISPLAY variable was set properly. Ensure that the xhost command was given on the initial login host. [For detailed instructions refer to the applicable procedure, either Launching the Production Request Editor or Launching Planning Workbench-Related GUIs (previous sections of this lesson).]
Error message indicating that SNS (System Name Server) and/or Resource Model is/are in use using the selected Application ID.	 Use another Application ID if working in a different mode from the person using the selected Application ID. If working in the same mode as the other user, coordinate use of Planning applications with the other user and/or the System Administrator. [For detailed instructions refer to the procedure for Launching Planning Workbench-Related GUIs (previous section of this lesson).]
Other problems.	1. Ensure (e.g., using ECS Assistant) that the necessary hosts and servers (listed in Table 4) are "up." 2. If hosts/servers have gone down, notify the Operations Controller/System Administrator to have servers brought back up using HP OpenView. 3. If hosts/servers are all "up," check the log files (e.g., EcPIPREditor.ALOG, EcPIWb.ALOG, EcPITI.ALOG) in the /usr/ecs/MODE/CUSTOM/logs directory for error messages. [For detailed instructions refer to the procedure for Checking Log Files (subsequent section of this lesson).]

Checking Log Files



- Log files can provide indications of the following types of problems:
 - DCE problems
 - Database problems
 - Lack of disk space

Checking Log Files (Cont.)



Procedure

- Access a terminal window logged in to the appropriate host
- Change directory to the directory containing the resource planning log files
 - » /usr/ecs/MODE/CUSTOM/logs
- Review log file to identify problems
 - » EcPIPREditor.ALOG
 - » EcPIWb.ALOG
 - » EcPITI.ALOG
 - » other log files
- Respond to problems

Launching Production Processing Applications



Production Processing Applications

- Subscription Manager
- Job Management
- Data Management
- Execution Management
- PGE Management
- Deletion Server
- AutoSys/AutoXpert
- QA Monitor

Launching Production Processing Applications



Procedure

- Access the command shell
- Log-in to the Data Processing Subsystem host
- Set the DISPLAY environmental variable
- Set the ECS_HOME environmental variable
- Source the appropriate file
- Start AutoSys in the appropriate mode

Configuring AutoSys (Cont.): AutoSys GUI Control Panel



AutoSys - [
Ops Console	Job Definition	Calendars	Monitor/Browser
HostScape	JobScape	TimeScape	Exit

Configuring AutoSys Screens/Displays



AutoSys/AutoXpert

- production scheduling tool
- supports the operational activities surrounding production processing in the PDPS
- assists with the following activities (among others):
 - » job monitoring
 - » job scheduling
 - » fault notification
 - » job restart
 - » determining the effects of failure of a DPR
 - » determining the cause and actions to be taken due to the failure of a DPR



- AutoSys/AutoXpert (Cont.)
 - displays DPRs as job boxes
 - recognizes the following three categories of jobs:
 - » box jobs
 - » command jobs
 - » file-watcher jobs



Box job

- collection of other jobs
- provides an organizational structure for a group of jobs that should be run within the same time period
 - » performs no processing action

Command job

 "command" can be a shell script, the name of an executable program, a file transfer, or any other command that causes execution of a UNIX command on client machine



File-watcher job

- functions similarly to a command job
- monitors the creation and size of a particular operating system file
- allows AutoSys to know the status of external files that are needed in the processing of command jobs or box jobs



- AutoSys Job Starting Parameters
 - Date and time scheduling parameters are met
 - Starting Conditions specified in the job definition evaluate to "true"
 - For jobs in a box, the box must be in the RUNNING state
 - The current status of the job is not ON_HOLD or ON_ICE
- AutoSys finds all jobs that may be affected by any change in the truth of the starting parameters and determines whether or not to start the jobs



- AutoSys Jobs (ECS)
 - Each DPR generated by the Planning Subsystem defines a box job for AutoSys
 - Every DPR/box job is composed of seven command jobs that run in the following order:

» Allocation (EcDpPrEM)

» Staging (EcDpPrDM)

» Pre-processing (EcDpPrEM)

» Execution (EcDpPrRunPGE)

» Post-processing (EcDpPrEM)

» Insertion (EcDpPrDM)

» Deallocation (EcDpPrEM)

 Each of the last six ECS command jobs is dependent on successful completion of the command job that precedes it



- DPR (box job) may be dependent on the successful completion of some other DPR
 - usually involving a need for the output of another DPR as input
- Effects of DPR dependencies
 - dependent DPRs are "held" by AutoSys until their data availability subscriptions are fulfilled
 - subscription manager software (in the PLS) informs the DPS to release the AutoSys jobs after all data subscriptions for a given DPR are fulfilled
 - DPS (as managed by the AutoSys Job Scheduling engine) runs the PGEs and associated jobs as the resources required for the tasks become available
 - procedure continues until all DPRs scheduled for the day have completed



- The optimum number of jobs for an AutoSys instance is about 3200 jobs (400 DPRs)
 - Job Management server in DPS determines the number of jobs in the PDPS database associated with Job Management's operating mode and compares the number with the maximum allowable for the mode [as specified in the Job Management configuration file (DpPrAutoSysMaxJobs in EcDpPrJobMgmt.CFG)]
 - Job Management deletes successfully completed jobs (in Job Management's mode only) from AutoSys to make room for jobs in the processing queue
 - Optimum number of jobs (3200 jobs 400 DPRs), should be divided among the active modes according to what they are doing; e.g., 3000 for OPS mode and just a few (e.g., 40) for SSI&T and test



- DAAC Production Monitor uses AutoSys/ AutoXpert for...
 - modifying DPR priorities and inputs as required
 - transferring/deleting/suspending/resuming DPRs as required (e.g., requests, resource problems, input data schedule problems, special events, schedules replans, etc.)
 - monitoring and providing processing status upon request



Configuring AutoSys Runtime Options

- Refresh Interval
 - » determines how often the View Region will be updated
- Ping Interval
 - » defines how often the connectivity will be evaluated
- Hang Time
 - » specifies the length of time jobs will continue to be displayed within a machine after they have completed running
- Inches/Hr
 - » indicates how much information is displayed on the screen

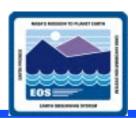
Configuring AutoSys (Cont.): Configuring Runtime Options

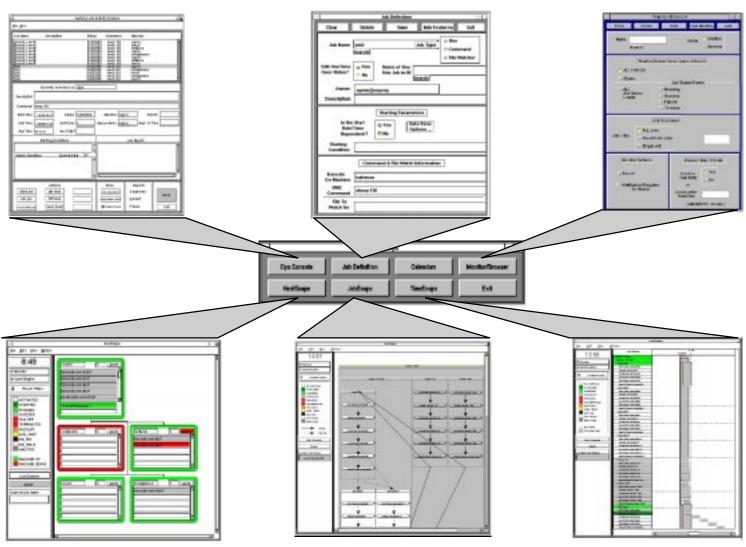


Procedure

- Click on either the HostScape, TimeScape, or JobScape button to display the corresponding AutoXpert GUI
- Select Options → Edit Runtime Options from the pull-down menu to display the Runtime Options dialog box
- Enter new values for the runtime options as necessary
 - » refresh interval
 - » ping interval
 - » hang time
 - » number of inches/hour
- Apply the modifications

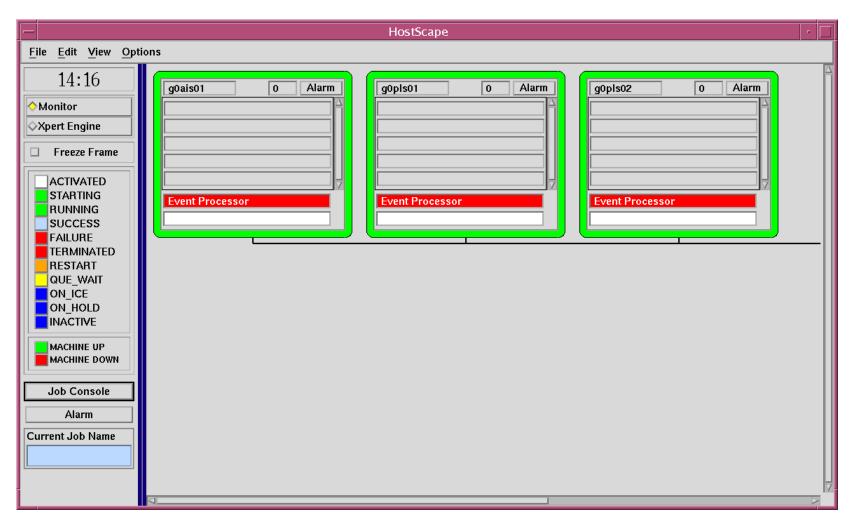
AutoSys GUI Control Panel



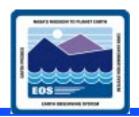


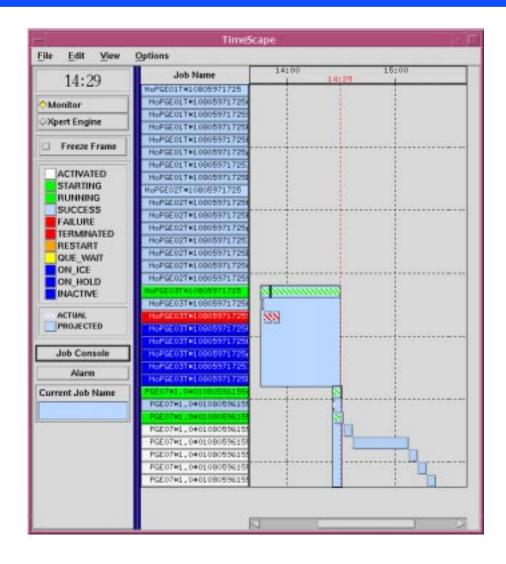
AutoXpert HostScape GUI





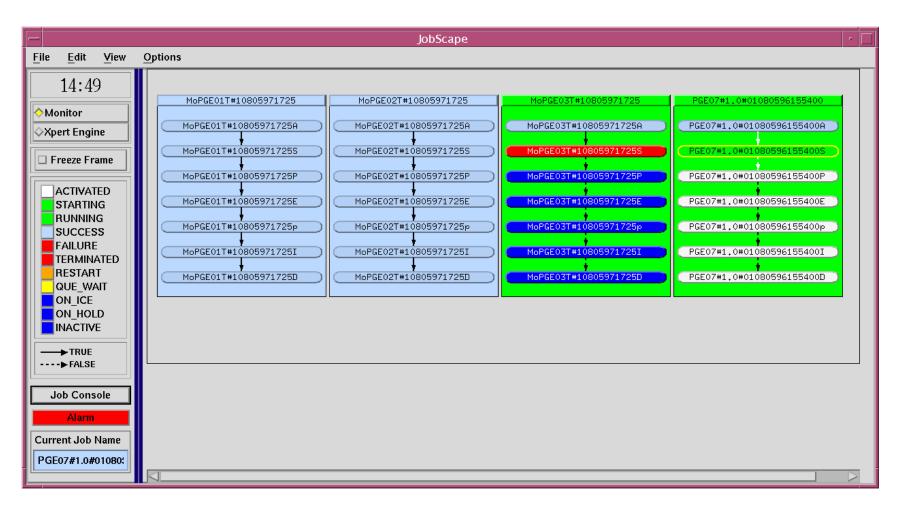
AutoXpert TimeScape GUI





AutoXpert JobScape GUI





Configuring AutoSys (Cont.)



Configuring Hardware Groups

- makes it easier to monitor the hardware associated with a particular function (e.g., testing, training, or a certain type of processing)
- default group is "All Machines"
- Production Monitor defines a specific set of machines to be monitored as a group
 - » must know which machines are to be included in the group
 - » should devise a useful name for the group

Configuring AutoSys (Cont.): Configuring Hardware Groups



- If necessary, log in to the processing host
- If necessary, source the appropriate set-up file
- Type vi xpert.groups. AutoSysInstance
- Using vi editor commands create/modify hardware groups as necessary
- Press the Esc key
- Save the xpert.groups. AutoSysInstance file
- Launch AutoSys/HostScape
- Select View → Select Machine Group from the pulldown menu

Configuring AutoSys (Cont.): AutoSys Hardware Group File



groupname: Training

g0pls02

g0sps06

g0spg01

groupname: SSI&T

g0ais01

g0sps06

g0spg01

Reviewing Hardware Status, DPR Dependency, etc.



Reviewing Hardware Status

- Production Monitor reviews hardware status using AutoXpert HostScape GUI
- Production Monitor can determine the following conditions (among others):
 - » status of processors
 - » condition of the queue
 - » whether any processors are overloaded while others are idle
 - » whether there are any system problems



- Reviewing Hardware Status (Cont.)
 - HostScape displays jobs on a machine-by-machine basis
 - » which AutoSys server/client machines are up and active
 - » which jobs are running or have recently run on each machine
 - HostScape can display hardware status in real-time



- Click on the HostScape button on the AutoSys GUI Control Panel
- Review the Control Region to identify the color codes for the status of the machines
- Review the machine type in the View Region
- Review the machine boxes in the View Region to determine the status of individual machines
- Review the Alarm indicating buttons of individual machines in the View Region
- Review the machine connection status in the View Region



- Changing the Hardware Status View
 - View Options provide three methods of viewing hardware status:
 - » normal
 - » global
 - » zoom

Reviewing Hardware Status etc. (Cont.): Changing Status Views



- Select a machine in the View Region by clicking on its name, then select...
 - » first Select View Level...
 - » then Global View
- Select a specific machine by clicking on its name, then select Zoom in Machine
 - » zoom view is displayed
 - » table listing relevant data is displayed
- Select Dismiss
 - » global view is displayed
- Select View → Select View Level then select Normal View
 - » normal view is displayed



- Reviewing DPR Dependencies
 - The Production Monitor reviews DPR dependencies using AutoXpert JobScape GUI
 - » presents a Pert-like view of job processing from a logical (or job dependency) point of view
 - » depicts all job types; i.e., command jobs, box jobs, and file-watcher jobs
 - » depicts the nesting of jobs within boxes and the dependencies between jobs.
 - » can be used for monitoring job flow in real-time
 - » allows the Production Monitor to identify potential problems before they become actual problems
 - AutoSys defines job status in the terms listed in the table
 - » different states are color-coded



Job States

- Activated (white)
- Starting (green)
- Running (green)
- Success (light blue)
- Failure (red)
- Terminated (red)
- Restart (orange)
- Que_Wait (yellow)
- On_lce (dark blue)
- On_Hold (dark blue)
- Inactive (dark blue)



- ON_HOLD vs ON_ICE
 - ON_HOLD
 - » Lose a Turn. (Can start anytime from stop point.)
 - ON_ICE
 - » Go to Jail. Do not pass GO. Do not collect \$200. (ALL conditions must be reset before starting again.)

Reviewing Hardware Status etc. (Cont.): DPR Dependencies



- Click on the JobScape button on the AutoSys GUI Control Panel
- Review the Job Display to determine the status (color-coded) of DPRs
- Review the Job Display to determine the types of jobs
- Select a job (for which descendants are to be determined)
- Review the job's descendants
- Select Show Children from the Descendants pop-up menu
- Select Show All Descendants from the pop-up menu
- Select Hide All Descendants from the pop-up menu



Reviewing the DPR Production Timeline

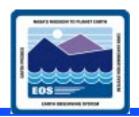
- Production Monitor reviews the DPR Production Timeline using AutoXpert TimeScape
 - » presents a Gantt-like view of a job processing from a temporal (time-related) point of view
 - » depicts all job types; i.e., Command Jobs, Box Jobs, and File Watcher Jobs
 - » depicts the nesting of jobs within boxes
 - » depicts the duration of time it will take for jobs to complete
 - » used for monitoring job flow in real-time

Reviewing Hardware Status etc. (Cont.): DPR Production Timeline



- Select TimeScape
- Review a job's descendants by clicking on the job
 - » Select Show Children from the Descendants pop-up menu
 - » Select Show All Descendants from the Descendants pop-up menu
 - » Select Hide All Descendants from the Descendants pop-up menu

Reviewing Hardware Status etc. (Cont.): Procedure



Good vs Bad

Projected	
Actual	
	Looks Good!
Projected	
	Actual
	Trouble!



Reviewing Alarms

- Alarms indicate problems with job processing
 - » failure of job processing
 - » database problem
 - » communication problem
 - » hardware or software failure
 - » some other error in the data processing system
- Production Monitor reviews alarms using the AutoSys Alarm Manager
 - » view alarms as they arrive
 - » provide a response to an alarm
 - » change alarm status



- Reviewing Alarms (Cont.)
 - Production Monitor can configure the Alarm
 Manager to display certain types of alarms only
 - » type of alarm
 - » alarm state
 - » time of the alarm

Reviewing Hardware Status etc. (Cont.): Reviewing Alarms



- Click on the Ops Console button on the AutoSys GUI Control Panel)
- Click on the Alarm button to display the Alarm Manager GUI
- Click on an alarm in the Alarm List
- Click the Response edit box and type in a response, if desired
- Update the Alarm State by clicking on the appropriate radio button
- Click on the Apply button
- Repeat steps as necessary to review and update multiple alarms

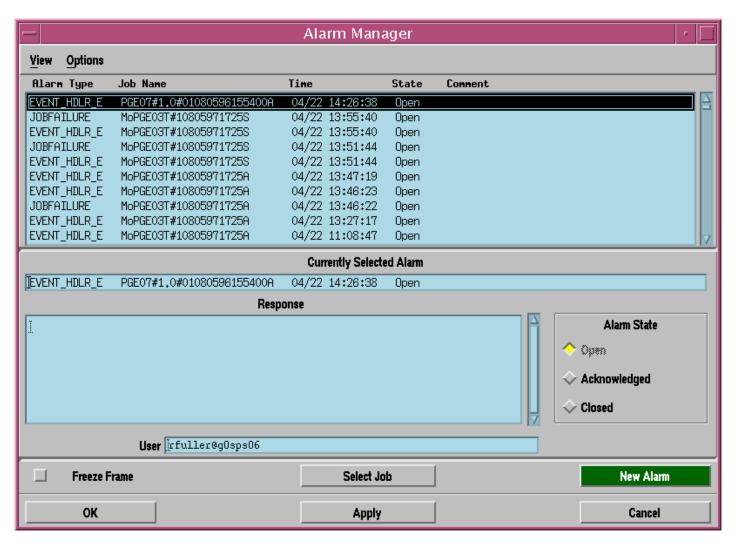
Job Activity Console



File Yiew Options			raccosys Jour r	ctivity Console		1.77
in in obtain						1000
Job Hone	Description	Statu	s Comend	Hachine		
MoPGE03T#10805971725		ON,HD				2
MoPGE03T#10805971725		0N,H0		nfigFile		
PGE07#1,0#0108059615 PGE07#1,0#0108059615		RUNNI SUCCE		etiette monette		
PGE07#1,0#010800B616		FLINKT				
PGE07#1,0#0108050615		ACTIV				
PGE07#1,0#0108059615		ACTIV				
PGE07#1,0#0108009615		HCTIV				
PGE07#1,0#0108059615		ACTIV				
PGE07#1,0#0108050615	54000	ACTIV	HTED EcileArtM Co	nfigfile		17
	Curre	tly Selected Job	P0E07#1.0#0108059	6155400s		Machine Time 14:32
Description				NAME OF TAXABLE PARTY.		
Command	EcOpPrint ConfigFile /usr/ec	s/TS2/CUSTUM/	of a/Ecoppeton OFG ec	s mode TS2 -stage PSEST	#1 0#01080596155400	
Start Time	04/22 14:26:40	Status	The state of the s	Marian Control of the	g0sps06	Priority
0.000	34.AU.40		The state of the s	71/2/2/2/2	Andrea	
End Time	-	Exit Code	- Control - Cont	Queue Hame		Hum. Of Tries 1
Run Time	00:07:11	Hext Start	8			
Starting Conditions Event Report						
success (#0207#1.0#0	1080596155400a)			Status/[Event]		tate ProceesTime Machine
Atomic Condition	Current State T/F			STATING NUMBER	04/22 14 26 35 1 Process 04/22 14 26 40 1 Process	sed 04/22 14:26:39 g0sps06 sed 04/22 14:26:44 g0sps06
SLICCESS (PGEOT#1,0#0				E .	Column to the Column	estate at the de doduce
				7 B.		10
fig.	Actions	90	10	Show	Reports	
Start Job	On Hold		Jobs Completed	Job Definition	→ Sunnary	
Kill Job	Off Hold		Jobs Waiting	Dependent Jobs	C Event	
Force Start Job	Send Event		Can/Del Jobs	Freeza France	→ None	Est

Alarm Manager GUI





Reviewing Hardware Status etc. (Cont.): Alarm Selection



- Select View → Select Alarms from the pull-down menu to display the Alarm Selection GUI
- Click on the desired alarm(s) in the Select by Type alarm list; to select all types of alarms, click on the All Types button
- Click on the All States button to select all alarm states; to select alarms by state click on whichever of the Select by State toggle buttons properly describe(s) the state(s) to be selected
- Click on the All Times button to select all times; to select alarms by time type the starting date in the From Date field
- Apply selections

Alarm Selection GUI



— Alarm Selection					
Select by Type		Select by State	Select by Time		
All Types		All States		All Times	
AUTO_PING CHASE DATABASE_COMM DB_PROBLEM DB_ROLLOVER DUPLICATE_EVENT EP_HIGH_AVAIL EP_ROLLOVER EP_SHUTDOWN EVENT HDLR ERROR		Open Acknowledged Closed	From Date From Time To Date To Time	i04/22/98 i14:32 i04/22/98 i14:32	(MM/DD/YY) (hh:mm) (MM/DD/YY) (hh:mm)
ОК	7	Apply			Cancel



- Specifying Job Selection Criteria
 - Production Monitor reviews job activities using the AutoSys Job Activity Console
 - AutoSys Job Selection GUI is used for...
 - » specifying (filtering) jobs the Production Monitor will review
 - » setting the criteria for displaying jobs by name, status and/or machine

Specifying Job Selection Criteria

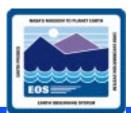


- Click on the Ops Console button on the AutoSys GUI Control Panel
- Choose View → Select Jobs from the pull-down menu to display the Job Selection GUI
- For the Select by Name option select all jobs by clicking on the All Jobs button
- To select all job statuses click on the All Statuses button; to select jobs by status click on the appropriate Select by Status toggle buttons
- To select all machines click on the All Machines button
- Click on the desired order in the Sort Order area
- Apply the selections

Job Selection GUI



Job Selection					
Select by Name	Select by Status	Select by Machine			
All Jobs	All Statuses	All Machines			
→ Job Name	☐ Starting	g0spg01			
	☐ Running	g0sps06 g0ais01			
♦ Box Name	☐ Success				
Box Levels	Failure				
[all	☐ Terminated				
	☐ Restart				
	☐ Que Wait				
	Activated				
	☐ Inactive				
	☐ On Hold				
	☐ On Ice				
	Sort Order				
♦ Start Time	Job Name 🔷 Machine Nam	me			
♦ End Time	Job Status 🔷 Unsorted				
ОК	Apply	Cancel			



- Reviewing Job Activities
 - Production Monitor reviews job activities using the AutoSys Job Activity Console
 - » primary interface for monitoring all jobs that have been defined for AutoSys
 - » based on criteria defined using the Job Selection GUI

Reviewing Hardware Status etc. (Cont.): Reviewing Job Activities



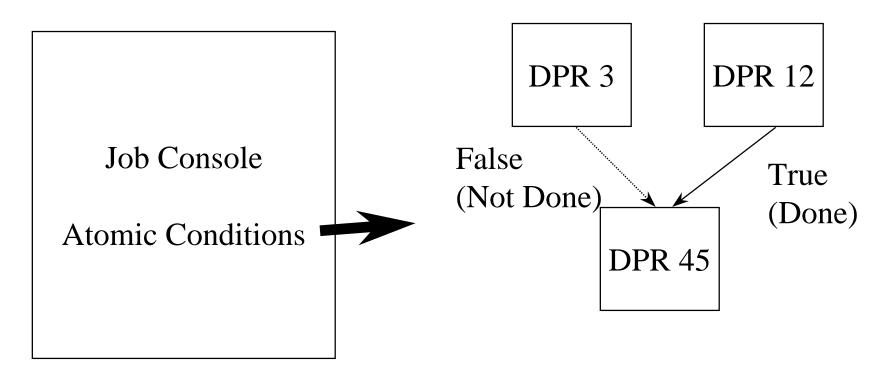
- Click on the Ops Console button on the AutoSys GUI Control Panel
- Generate a list of jobs using the procedure for Specifying Job Selection Criteria
- Review the job data in the Job List region of the Job Activity Console
- Click anywhere on a job row to have detailed information for that job displayed
- Review the data in the Currently Selected Job region of the display
- Review the data in the Starting Conditions region of the display
- In the Reports list click on the type of report to be reviewed then review the report

Reviewing Hardware Status etc. (Cont.): Procedure



Nuke'm

JobScape GUI



Modifying Job Priority



Job Priority

- sometimes necessary to modify the priority of a job; examples:
 - » there may be a hardware or software problem that reduces the available resources to the point where some jobs are too large to be processed
 - » due to the volume of large, high-priority jobs, some small, low-priority jobs will never be processed unless they are given higher priority
 - » job priorities are assigned using numbers:
 - » 1 (one) has the highest priority
 - » higher-priority jobs (lower numerically) completely block lower-priority jobs

Modifying Job Priority (Cont.)



Job Priority (Cont.)

- prevents situations where a high-priority, resourceintensive job cannot obtain enough resources to run because smaller, lower-priority jobs continually grab the small amounts of resources available
- Production Monitor uses AutoSys when modifying job priority

Modifying Job Priority (Cont.)



CAUTION

The only field that may be modified on the Job Definition Advanced Features GUI is the Que Priority field. ECS cannot disable these GUI features, because AutoSys/ AutoXpert is a commercial off-the-shelf (COTS) product.

Modifying Job Priority (Cont.)



- Click on the Job Definition button
- Type the name of the job with the priority to be modified in the Job Name field
- Click on the Adv Features button to display the Job Definition Advanced Features GUI
- In the Command Information area of the Job
 Definition Advanced Features GUI, click in the Que
 Priority field and type in the desired priority value
- Click on the Save&Dismiss button to save the modified Que Priority value
- Click on the Exit button to quit the Job Definition
 GUI

Job Definition GUI



Job Definition r □					
Clear	Delete	Save	Adv Fea	tures	Exit
Job Name	PGE07#1.0#0108055	06155400	Job Type	♦ Box ♦ Comm	
Edit OneTime Over-Rides ?	V	ame of Box is Job is IN	š. Search	V 1 110 11	
Owner	is2user@g0sps06				
Description	Ĭ				
Date		. C	ate / Time Options		
Box Completion Conditions Success Condition Failure Condition EXITCODE(PGE07#1.##10000536155440p) > 0 AND DONE(PGE07#1.##					

Job Definition Advanced Features GUI



─ Job Definition Advanced Features					
Alarms	Dismiss	Save&Dismiss	Terminators		
Minimum Run Time j mins		Vatching riteria	If this Job Fails should the Box it is IN be Terminated? ^ No		
Maximum Run Time j mins	Time Interval (Determine Sta		If the Box FAILS Yes should this job be Terminated?		
Send ALARM if	Minlinum Fili (In BYTE		Terminated? No Terminate this job Mins after starting		
Command Is	nformation		Misc. Features		
Que Priority Maximum Bet Code for SUCCESS		eartheat eval (mins)	Number of Times to Restart this Job after a FAILURE		
Joh Environment Profile	Time Zone				
I File to Redirect to Standard Input	Delete Job after completion hours				
File To Redirect Standard Output			AutoHold On? Ves (for Jobs in Boxes)		
			^ No Permissions		
1			Execute Edit Dfn Group 🔽 🔽		
External Application			World		
Resource Check – File System Space (file1 size1 file2 size2) size in KBytes Commands & File Watchers					

Modifying Job Status



- Sending an Event to a Job
 - Production Monitor may need to modify a particular job in any of the following ways:
 - » start the job
 - » kill the job
 - » force the job to start
 - » place the job on hold
 - » take the job off hold
 - » perform certain Job Management Client functions
 - Alternatively, the Production Monitor may need to generate one of the following types of reports:
 - » Jobs Completed
 - » Jobs Waiting

Jobs Completed Report



DPR ID	COMP	COMPLETION STATE	
ACT#syn1#00413	0123OPS	SUCCESS	250
AM1Eph#2.00731	10420OPS	SUCCESS	250
BTS#syn1#00413	0123OPS	SUCCESS	250
ETS#syn1#00413	0123OPS	SUCCESS	250

Jobs Waiting Report



DPR ID	COMPL	ETION STATE	PRIORITY	PREDICTED START TIME
AM1Eph#2.00731	10620OPS	CQ_HOLD	250	10/27/98 18:44:01.000
AM1Eph#2.00731	10820OPS	CQ_HOLD	250	10/27/98 18:44:16.000
AM1Eph#2.00731	1020OPS	CQ_HOLD	250	10/27/98 18:44:31.000
AM1Eph#2.00731	1220OPS	CQ_HOLD	250	10/27/98 18:44:43.000



- Sending an Event to a Job (Cont.)
 - Production Monitor can initiate the preceding actions from the Actions region of the Job Activity Console (Ops Console)
 - An alternative method for accomplishing many of those operations involves the use of the Send Event GUI



- Send Event GUI allows the Production Monitor to initiate any of the following actions:
 - » Start the job
 - » Kill the job
 - » Force the job to start
 - » Place the job on hold
 - » Take the job off hold
 - » Change the job's status
 - » Change the job's priority
 - » Put the job on ice

- » Take the job off ice
- » Stop the daemon (stop the Event Processor in an emergency)
- » Set a global value
- » Send a signal concerning the job
- » Make a comment (for example, why a job start was forced)



CAUTION

Once an event has been sent from the Send Event dialog, it may not be possible to cancel or modify it.



- Click on the Ops Console button
- Identify the job with the status to be modified
- In the Job List region of the Job Activity Console click on the job row corresponding to the job
- Click on the Send Event button
- Select the Event Type
- Enter the desired date and time when the job status is to be modified
- Change the Queue Priority entry if Change Priority was selected
- Select Status to send if Change Status was selected
- Select the Send Priority
- Click on the Execute button

Send Event GUI



─ Send Event					
	♦ Start Job	> Force Start Job			
	→ Job On Hold	→ Job On Ice	Set Global		
Event Type	→ Job Off Hold	→ Job Office	Send Signal		
		♦ Change Status			
	Cancel Previous	y Sent Event	Match on Time		
Job Name	DPREP#1021998000	00.EX			
	Date [04/11/97 (MM/DD/YY)				
◆ Now	← Future Time	14:52 (hh:mm)	◇ АМ. ◇ РМ.		
Comment	<u>.</u>				
,	AUTOSERV Instance	<u>Lhe</u>			
Global Name	Ĭ.	Global Yalı	w I		
Sìgnal	Ĭ.	Queue Priori	ty I		
Status	Running —	Send Priori	ty 🔷 Normal 💠 High		
Execut	e		Cancel		



- Performing Job Management Client Functions
 - Get access to any of the following Job Management Client functions from AutoSys by clicking on the Client Tool button in the Actions region of the Job Activity Console
 - » Create DPR Job
 - » Release DPR Job
 - » Cancel DPR Job
 - » Change DPR ID
 - » View Job Management DPR Queue
 - » Create Ground Event Job
 - » Cancel Ground Event Job



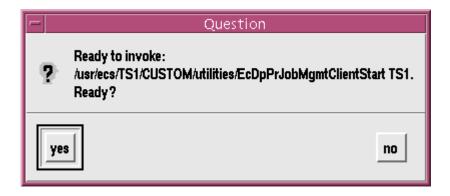
- Performing Job Management Client Functions (Cont.)
 - Clicking on the Client Tool button invokes the Job Management Client program
 - » Using this interface to the ECS PDPS Processing software maintains synchronization with the PDPS database
 - » Jobs should not be deleted using the AutoSys Job Definition GUI because it does not communicate with the PDPS database



- Performing Job Management Client Functions (Cont.)
- Procedure
 - Verify that the job with the status to be modified is listed in the Currently Selected Job field of the Job Activity Console (Ops Console)
 - Click on the Client Tool button
 - Enter the number corresponding to the desired function at the "enter an option" prompt
 - Enter responses to Job Management Client prompts

'Ready to Invoke' Dialog Box





Job Activation User Interface Window



```
lobs Activation User Interface
Warning: Could not open message catalog "oodce.cat"
01/31/99 13:41:25: [Warning:
Invalid Resource Catalog directory path or no catalog installed
Applications can run with or without Resource Catalog
FYI : Values of ECS_HOME env variable and RC Directory path:/usr/ecs/TS1/CUSTOM/data/DPS/ResourceCatalogs
Creating DpPrSchedulerProxy object...
DpPrSchedulerProxy:: In Constructor
Client Path: /.:/subsys/ecs/TS1/EcDpPrJobMgmt
01/31/99 13:41:25: EcNsServiceLocClient.C - Next Binding:
        3975babe-b23d-11d2-bb71-c676e80daa77@ncacn_ip_tcp:198.118.232.13[]
01/31/99 13:41:25: EcMsServiceLocClient.C - Trying binding:
        3975babe-b23d-11d2-bb71-c676e80daa77@ncacn_ip_tcp:198.118.232.13[55619]
01/31/99 13:41:25: EcNsServiceLocClient.C - Binding to be returned:
        3975babe-b23d-11d2-bb71-c676e80daa77@ncacn_ip_tcp:198.118.232.13[55619]
01/31/99 13:41:26: Client Successfully connected to the server object
MODPGE08#s28020500TS2P is an invalid job box
An invalid dprId was chosen,
*** Current OprId:NONE Current Mode:TS1 ***
 1) Create Dpr Job
 2) Release Dpr Job
 3) Cancel Dpr Job
 4) Change Dpr Id
 5) View Job Management Dpr Queue
 6) Create Ground Event Job
 7) Cancel Ground Event Job
enter an option:
```

Reviewing Activity and Job Dependency Logs



- Reviewing an Activity Log
 - Production Monitor reviews the activity log to determine which jobs...
 - » have been completed
 - » are currently running
 - » are in the queue

Sample Activity Log



------ Date: 06/14 21:52:04 >------EVENT: CHANGE_STATUS STATUS: STARTING JOB: stage.DPR_04 EVENT: CHANGE_STATUS STATUS: RUNNING JOB: stage.DPR 04 EVENT: CHANGE_STATUS STATUS: SUCCESS JOB: stage.DPR_04 EVENT: CHANGE_STATUS STATUS: STARTING JOB: prepare.DPR_08 EVENT: CHANGE_STATUS STATUS: RUNNING JOB: prepare.DPR_08 **EVENT: CHANGE STATUS** STATUS: SUCCESS JOB: prepare.DPR_08

Reviewing Logs (Cont.): Activity Log



- Set up AutoSys
- Type autorep -J ALL unless the command needs to be modified to:
 - » specify a particular job
 - » obtain a machine report
 - » obtain a summary report
 - » obtain a detailed report
 - » obtain a query report
 - » print the document
 - » save the document in a file
- Review the Activity Log to identify job states

Reviewing Logs (Cont.)



- Reviewing a Job Dependency Log
 - Production Monitor reviews a job dependency log using the AutoSys job_depends command
 - job_depends command reports information about the dependencies and conditions of jobs
 - » current state of a job
 - » job's dependencies
 - » dependencies and nested hierarchies (for boxes) as specified in the job definition
 - » forecast of what jobs will run during a given period of time

Sample Job Dependency Log



Job NameStatusDate Cond?Start Cond?Dependent Jobs?DPR##ActivatedNoYesNo

Condition: (success(DPR_##) and exit code(execute.DPR_##)<5)

Atomic ConditionCurrent StatusT/FSUCCESS(SPR_##)SUCCESSTEXIT_CODE(execute.DPR_##)SUCCESSF

Reviewing Logs (Cont.): Job Dependency Log



- Set up AutoSys
- Type job_depends -c -J ALL unless the command needs to be modified to:
 - » specify a particular job
 - » obtain the current condition status
 - » obtain the dependencies only
 - » obtain the time dependencies
 - » print the document
 - » save the document in a file
- Review the Job Dependency Log to determine job states

Defining and Running Monitors/Browsers



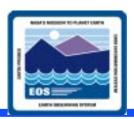
- Defining Monitors/Browsers
 - ECS does not currently support AutoSys monitor/browser capabilities
 - » However, they are functional and available
 - Production Monitor can use the AutoSys
 Monitor/Browser to define monitors and browsers
 - monitor function can limit monitoring to alarms and changes of job status (e.g., from "running" to "success" or "failure")
 - browser function can be used to determine such conditions as the current status of a particular job or which jobs presently have a particular status (e.g., which jobs, if any, are on hold)

Sample Browser Screen



```
BROWSER: REF BRO
Alarm: EVENT_HDLR_ERROR Job: PGE07#1.0#01080596155400P 04/22 15:04:39
                                                                    Run# 38
Job: PGE07#1.0#01080596155400E RUNNING
                                       04/22 15:04:40
                                                        Run# 380:1
                                                        Run# 380:1
Job: PGE07#1.0#01080596155400E SUCCESS
                                       04/22 15:04:42
                                                                   Exit Cod
Job: PGE07#1.0#01080596155400p STARTING
                                       04/22 15:04:44
                                                        Run# 380:1
Job: PGE07#1.0#01080596155400p RUNNING
                                       04/22 15:04:46
                                                        Run# 380:1
Job: PGE07#1.0#01080596155400E FAILURE
                                       04/22 15:04:54
                                                        Run# 380:0
                                                                   Exit Cod
e=0
Alarm: JOBFAILURE
                   Job: PGE07#1.0#01080596155400E 04/22 15:05:00
                                                                 Run# 380:0
 Exit Code=0
Job: PGE07#1.0#01080596155400p FAILURE
                                       04/22 15:06:05
                                                        Run# 380:1 Exit Cod
e=2
                   Job: PGE07#1.0#01080596155400p 04/22 15:06:11
Alarm: JOBFAILURE
                                                                 Run# 380:1
  Exit Code=2
Alarm: EVENT_HDLR_ERROR Job: PGE07#1.0#01080596155400p 04/22 15:06:12
                                                                    Run# 38
0:1
Run# 380:1
 04/22 15:35:40
```

Monitors/Browsers (Cont.): Defining Monitors/Browsers



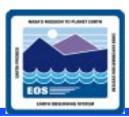
- Click on the Monitor/Browser button on the AutoSys GUI Control Panel
- Type a name for the monitor or browser in the Name field near the top of the GUI
- Select Types of Events
- Select Job Status Events
- Select the desired Job Selection Criteria
- Select the desired Monitor Options if applicable
- Select the desired Current Run Time and/or Events After Date/ Time, which are the Browser Time Criteria if applicable
- Select the desired Mode
- Save the monitor/browser

Monitor/Browser GUI



Monitor/Browser -			
Clear Delete	Save Run MonBro Exit		
Name REF_MONE Search	Mode Monitor Srowser		
Monitor/Browse these Types of Events ALL EVENTS Alarms Job CHANGE_STATUS Events ALL Job CHANGE— STATUS Success ReStart Events Failure Terminated			
Job Sele ALL Jobs Job Filter Box with its Joi Single Job	bs Job Name		
Monitor Options Sound Verification Required for Alarms	Browser Time Criteria Current Run Only - or - Events After Date/Time (MM/DD/YY hh:mm)		

Monitors/Browsers (Cont.)



Running Monitors/Browsers

- may be run from the Monitor/Browser GUI as described in the preceding procedure
- may be run using a UNIX command

Monitors/Browsers (Cont.): Running Monitors/Browsers



- Set up AutoSys
- Type monbro -N name &
- Review the monitor/browser results

Changing the Database Maintenance Time



Database Maintenance Time

- once a day the Event Processor goes into an internal database maintenance cycle
- during this time, it does not process any events
- it waits for the maintenance activities to be completed before resuming normal operations
- time of day for start-up of the maintenance cycle is pre-set to 3:30 AM
- database maintenance cycle takes approximately one minute
- if it is necessary to change the time when the maintenance cycle occurs, the Production Monitor can reset it
 - » preferably to a time when there is minimal activity

Changing the Database Maintenance Time (Cont.)



- Access the command shell
- Log in to the DPS host
- Set the DISPLAY environmental variable
- Change directory to the directory containing the config. AutoSysInstance file
- Use the vi editor to find DBMaintTime=03:30 and replace the existing time with the desired time in 24 hour format (hh:mm).
- Save the edited file

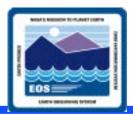
Troubleshooting Processing Problems



Troubleshooting:

process of identifying the source of problems on the basis of observed trouble symptoms

Troubleshooting Processing Problems



- Problems with production planning can usually be traced to...
 - some part of the Data Processing Subsystem
 - problems in other ECS subsystems, including (but not necessarily limited to):
 - » Planning Subsystem (PLS)
 - » Data Server Subsystem (DSS)
 - » Interoperability Subsystem (IOS)
 - » Communications Subsystem (CSS)

Troubleshooting Processing Problems (Cont.)



Troubleshooting table

- describes actions to be taken in response to some common Processing problems
- if the problem cannot be identified and fixed without help within a reasonable period of time, call the help desk or submit a trouble ticket in accordance with site Problem Management policy

Troubleshooting Processing Problems (Cont.)



Symptom	Response
Unable to log in to the Queuing Server host (e.g., g0sps06).	Check with the Operations Controller/System Administrator to ensure that the host is "up."
GUI not displayed when the start-up script has been properly invoked.	 Ensure that the DISPLAY variable was set properly. Ensure that the xhost command was given on the initial login host. [For detailed instructions refer to the procedure for Launching Production Processing Applications (previous section of this lesson).]
AutoSys job hangs (does not complete within the predicted time period).	Refer to the procedure for Handling a Job that is Hanging in AutoSys (subsequent section of this lesson).
"Allocate" job fails.	Refer to the procedure for Handling an Allocation Job Problem (subsequent section of this lesson).
"Stage" job fails.	Refer to the procedure for Handling a Staging Job Problem (subsequent section of this lesson).
"Preprocess" job fails.	Refer to the procedure for Handling a Preprocessing Job Problem (subsequent section of this lesson).

Troubleshooting Processing Problems (Cont.)



Symptom	Response
"Execute" job fails.	Ensure (e.g., using ECS Assistant) that the necessary hosts and servers (listed in Table 10) are "up." If hosts/servers have gone down, notify the Operations Controller/System Administrator to have servers brought back up using HP OpenView. If hosts/servers are all "up," refer the problem to SSI&T personnel.
"Post-process" job fails.	Refer to the procedure for Handling a Postprocessing Job Problem (subsequent section of this lesson).
"Insert" job fails.	Refer to the procedure for Handling an Insertion Job Problem (subsequent section of this lesson).
"Deallocate" job fails.	1. Ensure (e.g., using ECS Assistant) that the necessary hosts and servers (listed in Table 10) are "up." 2. If hosts/servers have gone down, notify the Operations Controller/System Administrator to have servers brought back up using HP OpenView. 3. If hosts/servers are all "up," check the log files (e.g., DPR#.ALOG) in the /usr/ecs/MODE/CUSTOM/logs directory for error messages. [For detailed instructions refer to the procedure for Checking Log Files (subsequent section of this lesson).]
Other problems.	Check the log files (e.g., EcDpPrJobMgmt.ALOG, EcDpPrDeletion.ALOG, DPR#.ALOG, DPR#.err) in the /usr/ecs/MODE/CUSTOM/logs directory for error messages. [For detailed instructions refer to the procedure for Checking Log Files (subsequent section of this lesson).]

Launching the QA Monitor



- Access the command shell
- Log in to the Planning Subsystem host
- Set the DISPLAY environmental variable
- Set the ECS_HOME environmental variable
- Start the QA Monitor GUI in the appropriate mode

QA Monitor GUI: QRU Data Tab



	Q/A Monitor
le .	Het
QRU data Visualize data	
Data Types DAP	Data Granule Insert (mm/dd/yyyy)
FAILPGE MOD00 MOD01 MOD02HKM	Begir 01 / 04 / 1996 # End 08 / 06 / 1996 #
MOD03 MOD03LUT MOD10_L2 MOD35_L2	Query
Data Granules: Acquisition Acquisition First	Granule Prod J#story
Date Time FileNan 08/05/96 11:55:01 :SC:MO 08/05/96 11:55:01 :SC:MO	
Find 1	
Rables e DataGranule	Retrieve ProdHistory Update Metadata
atus:bone Querying Data Sc	erver

Performing Science Product Quality Assurance (QA)



- Uses the QA Monitor application
- Science Computing Facility Personnel
 - responsible for performing QA of their products
- Production Monitor
 - updates QA metadata in response to a request from SCF personnel to set the metadata flags on specified granule(s)

Updating Quality Assurance (QA) Metadata



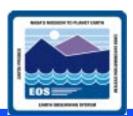
- Set up and query the database using the QA Monitor GUI
- Select the granule with QA metadata to be updated
- Set the operational and SCF quality flags to the appropriate value (as specified by the SCF personnel)
- Verify that the flags have actually been set in the database by repeating the set-up and query processes

QA Monitor GUI: Granule Parameters Window



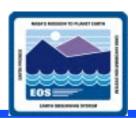
-	Granule Parameters				
	Parameter Name	Operational QA Flag	Operational Flag Explanation		
	Snow Cover	Being Investigated	Default flag and comment set k		
	Find				
		ОК	Cancel		

QA Monitor GUI: Update Meta Data Window



_			Update Met	a Data
				Explanation
	Operational Quality Flag	Being Investigated	_	Default flag and comment set by system.
	SCF Quality Flag	Being Investigated	_	Default flag and comment set by system.
	Auto Quality Flag	Passed		
	ОК		Cancel	Help

Regenerating Granules



- Produce replacements for previously generated granules that have been lost or corrupted due to failure in the ECS archive
- General Process:
 - Retrieve the Production History file (PH) for the lost granule to determine parameters for the generation of replacement granules
 - Create Production Requests for the generation of replacement granules
 - Create and activate a Production Plan that includes the Production Requests for the generation of replacement granules
 - Prepare (if applicable) a "PDPS Residual Granules List," which identifies granules that either cannot or should not be regenerated at the DAAC
 - Some granules do need not be reproduced; e.g., if there is a more recent version of the product

Regenerating Granules (Cont.)



- Considerations that apply to the regeneration of granules:
 - All outputs of the PGE [not just those equivalent to the lost granule(s)] are to be produced and archived
 - Various factors could make it impossible to reproduce granules identical to the originals
 - » There is no guarantee that when a PGE is re-run it will use the same inputs as were used during the original execution of the PGE; consequently, the output may be different from the original granule(s)
 - » Variability of Optional/Alternate inputs, Ad Hoc Reprocessing, Metadata Checks, Metadata Query and other production rules affects PGE output

Regenerating Granules (Cont.)



- Retrieve the Production History tar file for each granule in the Granules for PDPS Re-Generation list that needs to be reproduced
- Launch the SSIT Manager GUI
- Re-register the PGE (if not currently registered)
- Launch the Production Request Editor
- Create a Production Request for the relevant PGE/version/profile ID
- Launch the Planning Workbench
- Create and activate a production plan that includes the newly created Production Request(s)
- Send the PDPS Residual Granules list to the originator of the Granules for PDPS Re-Generation list